

LET US UNDERSTAND MATHEMATICS

CLASS 1

Harinder Mahajan
Former Research Scientist C
Delhi University

PREFACE

This is second of a series of books based on NCERT syllabus and research on teaching of mathematics for class 1. It is assumed the children have done KG, if not teacher can teach first using the book for KG and then for class 1 and postpone symbols, number names to class 2. The focus here is on laying a foundation for further learning of mathematics and understanding of concepts and procedures. Accordingly concepts and procedures are presented by manipulatives, pictures, real world situations, spoken and written words and symbols and opportunities are provided for translation from one mode to another.

Automaticity (answering without thinking) of addition and subtraction facts are emphasized. Ample opportunities are provided for applications of mathematics to real world situations. The teachers should provide more practice if necessary for mastery of skills, primary concepts and understanding of procedures and use objects that are readily available or situations for exercises that are familiar to the children in the class.

The schools that can should provide ample quantities of materials such as counters, tiles, geometrical models, tangram pieces, blocks, geoboards, dot papers, balances, grids, scissor, ropes. The children in class 1 should at least have with 9 bundles of 10-sticks and 10 single sticks of the same length and colour, models of different 2-D and 3 –D shapes and dot papers. They can be asked to bring buttons, keys, empty boxes and containers of different shapes and sizes.

As for most teachers textbook is the curriculum this book is a teaching guide cum workbook for students. As students have not yet developed reading skills the procedures should be illustrated with examples. The exercises with manipulatives and oral work are included to facilitate the teacher's work. Some activity sheets are also provided that can be removed and used by students.

Table of Contents

Unit 1	Shapes and Spatial Understanding
Unit 2	Review of Numbers 0-20
Unit 3	Addition of One-digit Numbers
Unit 4	Subtraction of Numbers where the Larger number does not exceed 18
Unit 5	Numbers 20-100
Unit 6	Addition of Two-digit Numbers
Unit 7	Subtraction of Two-digit Numbers
Unit 8	Money
Unit 9	Measurement
Unit 10	Handling and Display of Data
Unit 11	Patterns
	Activity Sheets

UNIT 1

Geometry

Shapes and Spatial understanding

Concept of shape

Activity 1.1

Give them chips of different shapes and ask them to sort them so that chips in a pile are similar.

Give them chips of different shapes and sizes and ask them to sort them so that chips in a pile are similar.

Cut and sort the figures given in Activity Sheet 1.1 in piles so that the figures in a pile are similar.

How are the figures in a pile similar?

Activity 1.2

Show students how to make different shapes on a Geoboard with rubber bands.

Ask them to make different shapes on a Geoboard with rubber bands.

Paste some figures made on a centimeter dot paper on black board and ask them to copy these on a Geoboard with rubber bands.

Copy shapes made by other students on a Geoboard.

Three-dimensional shapes

Activity 1.3

Ask students to bring from home empty boxes, cans, balls, cones, pipes etc.

Sort these objects into groups so that all objects in a group are similar.

Pictures of some objects are given in Activity Sheet 1.2. Cut and sort these objects so that all objects in a pile are similar.

Get models of a sphere, cylinder, cuboid and cone and ask students which of the other things in their collection are like these?

What are these things used for?

Which of these will roll?

Which of these will slide?

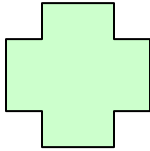
Which can be used to build walls? (Remember a wall cannot have holes)

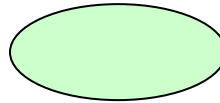
Spatial Positions

Activity 1.4

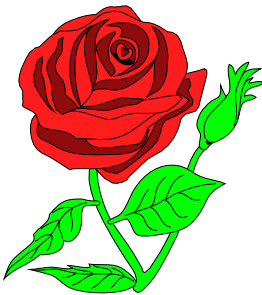
Left and right

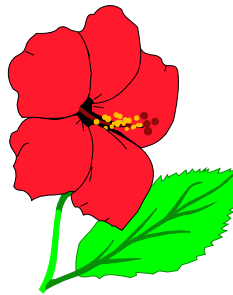
1. Show your left hand.
2. Show your right hand.
3. Tell the name of child sitting on your right.
4. Tell the name of child sitting on your left.
5. Which of the figures given below is on the left, mark a ✓ under it.





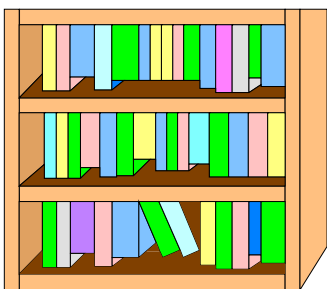
6. Mark a ✓ under flower on the right





Top and bottom

1. Make a tower of blocks and ask students to point to the blocks at the top and bottom
2. Open a class cupboard and ask students point to the shelf at the top and bottom of the cupboard.
3. Make a pile of books and ask them to point to the notebook at the top and bottom of the pile.
4. In the pictures given below show top and bottom:



Similarly explain and test spatial relationship between objects such as **on and under; inside and outside; above and below, near and far, before and after; row and column** by arranging blocks or using objects in the surroundings.

Teacher may ask questions such as

Where is the duster? (It is on the table).

Whose desk is nearer the teacher's table (name two students)?

Which is farther from the classroom (school library or principal's office)?

What do we have in school before the first period? (Prayer).

What do you do after you go home?

In a queue of students, name the student that comes before or after a particular student.

In a row of blocks, name the colour of the block that comes before or after a particular block.

Give examples of persons and objects that are inside the room?

Give examples of persons and objects that are outside the room?

UNIT 2

Review of Numbers 0 to 20 and Number Names in Words

Numbers 1 to 20



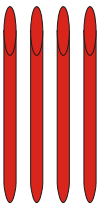
ONE 1



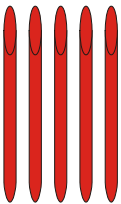
TWO 2



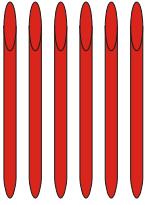
THREE 3



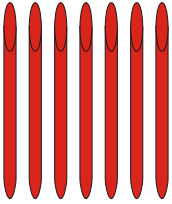
FOUR 4



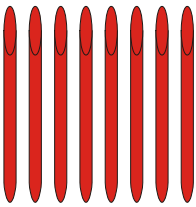
FIVE 5



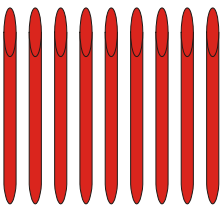
SIX 6



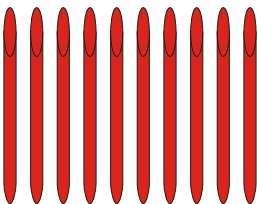
SEVEN 7



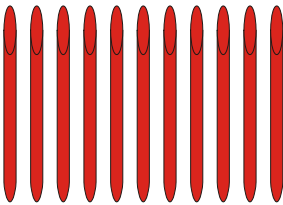
EIGHT 8



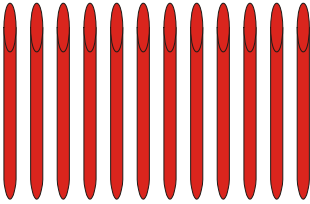
NINE 9



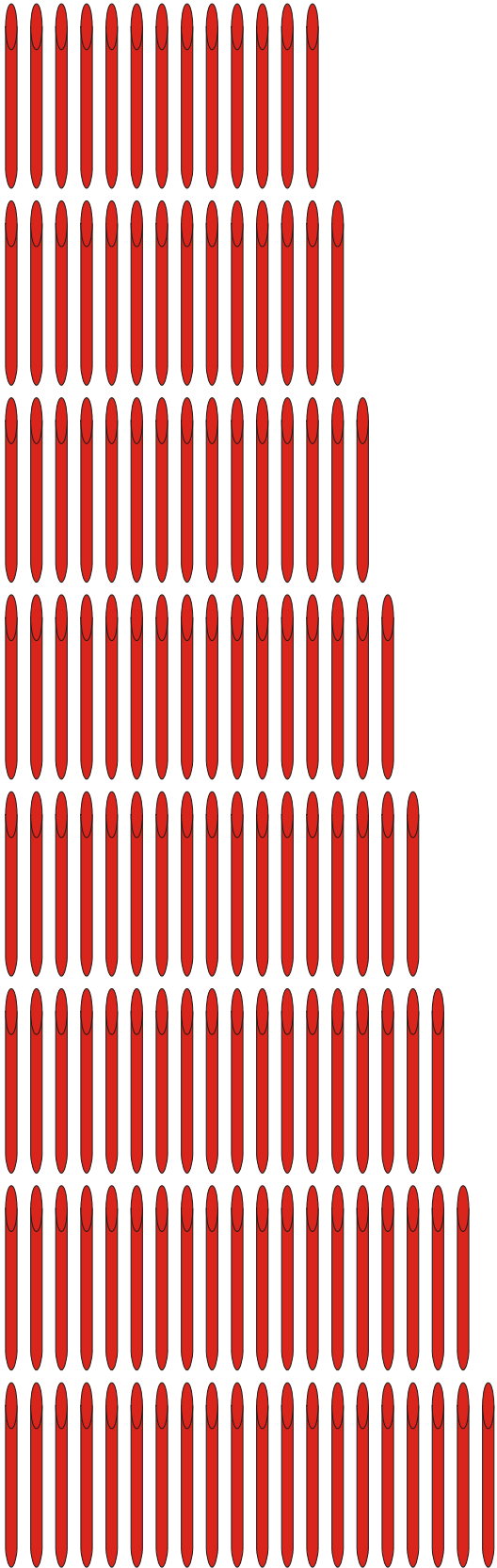
TEN 10



ELEVEN 11



TWELVE 12



THIRTEEN 13

FOURTEEN 14

FIFTEEN 15

SIXTEEN 16

SEVENTEEN 17

EIGHTEEN 18

NINETEEN 19

TWENTY 20

Finding number of objects in a collection

We can find number of objects in a set by matching objects with number names in counting. The number matching the last object gives the number of objects in the set.

Ask them to find number of objects in different collection of objects or sticks.

Concept of zero as absence of objects

Zero denotes absence of objects. For example, if there are no sticks in my hand, we say there are zero sticks in my hand.

If there are three birds and one flew away, how many birds are left? If one more flies away, how many birds are left? If that too flies away, how many birds are left?

We write zero like this-0

Counting

Saying numbers in order 1, 2, 3 ... is called **counting**.

Provide practice in counting, reading and writing of numbers from 0 to 20 until the students are fluent in it.

Exercise 2.1

1. Count numbers from 1 to 20.
2. Count back numbers from 20 to 1.
3. Write numbers 0 to 20 in words and figures and draw as many lines against each number

0	Zero	
1	One	
2	Two	

Exercise 2.2

1. Set aside number of sticks given below
2, 1, 4, 6, 8, 0, 9, 5, 3, 7, 12, 15, 17, 20, 14, 16, 18, 13, 14, 19,
11, 10.
2. Draw as many lines as the number against it.

1	
5	
8	
12	
7	
16	
19	
0	
13	
20	
17	

3. Read the following numbers:
6, 4, 8, 0, 7, 9, 2, 5, 1, 3, 0, 10, 15, 13, 19, 20, 11, 14, 16, 18, 12,
17.

4. Write the following numbers (to be dictated by the teacher)
6, 8, 9, 7, 4, 1, 10, 2, 5, 3, 15, 11, 0, 12, 13, 18, 14, 20, 19, 16, 17.
5. Write the following numbers in words:

2 _____	5 _____	4 _____
9 _____	4 _____	7 _____
0 _____	8 _____	3 _____
6 _____	5 _____	1 _____
11 _____	17 _____	14 _____
15 _____	19 _____	10 _____
12 _____	13 _____	20 _____
16 _____	18 _____	15 _____

6. Write the following numbers in figures

Two _____	Five _____	Four _____
Seven _____	Three _____	Eight _____
One _____	Six _____	Zero _____
Nine _____	Twelve _____	Fifteen _____
Eleven _____	Thirteen _____	Ten _____
Sixteen _____	Nineteen _____	Fourteen _____
Seventeen _____	Twenty _____	Eighteen _____

Exercise 2.4

Write numbers
that come just
after the following
numbers

9	10
7	
2	
6	
19	
0	
11	
16	
4	
13	
18	

Write numbers
that come just
before the
following
numbers

5	6
	1
	11
	8
	10
	17
	20
	6
	11
	15
	19

Write numbers
that come between
the following
numbers

6	7	8
3		5
7		9
4		6
10		12
11		13
15		17
0		2
18		20
16		18
17		19

Exercise 2.5

1. Count all the numbers up to 20 beginning with the following numbers:
2, 4, 8, 12, 15, 19
2. Write all the numbers up to 20 beginning with the following numbers:
3

5

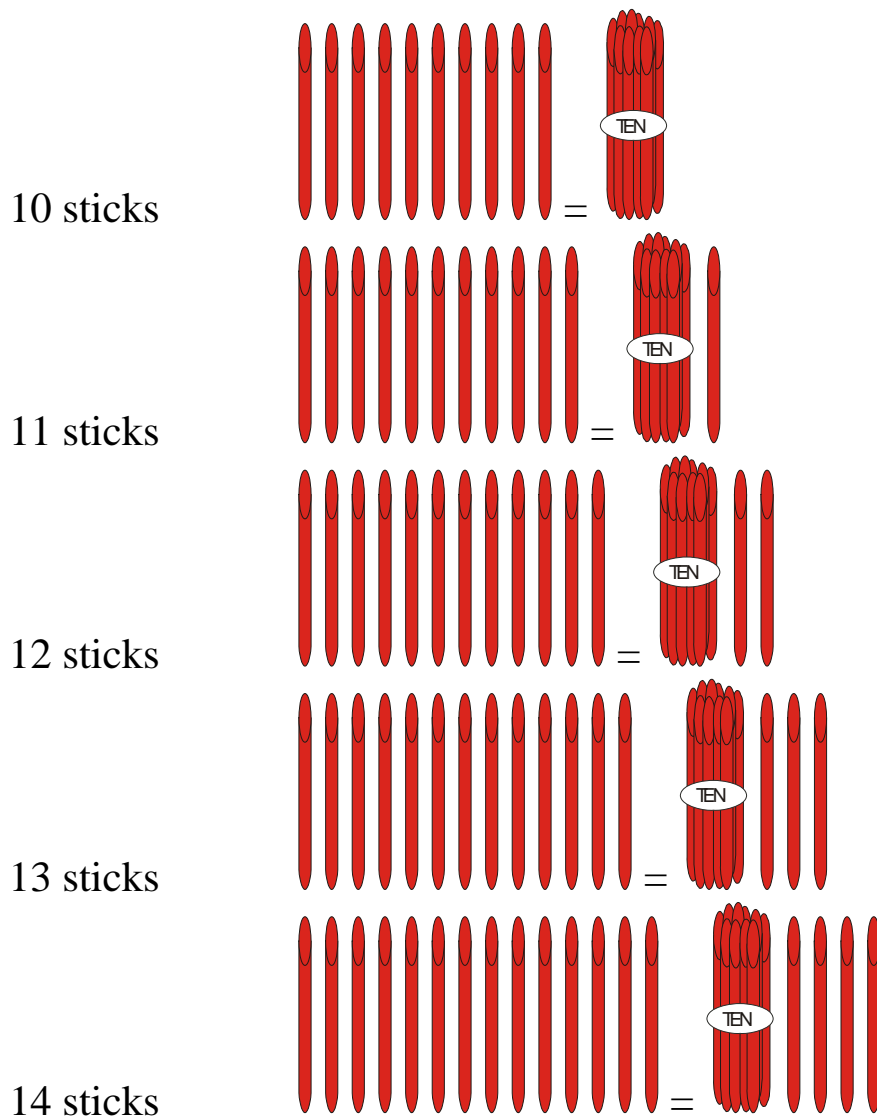
10

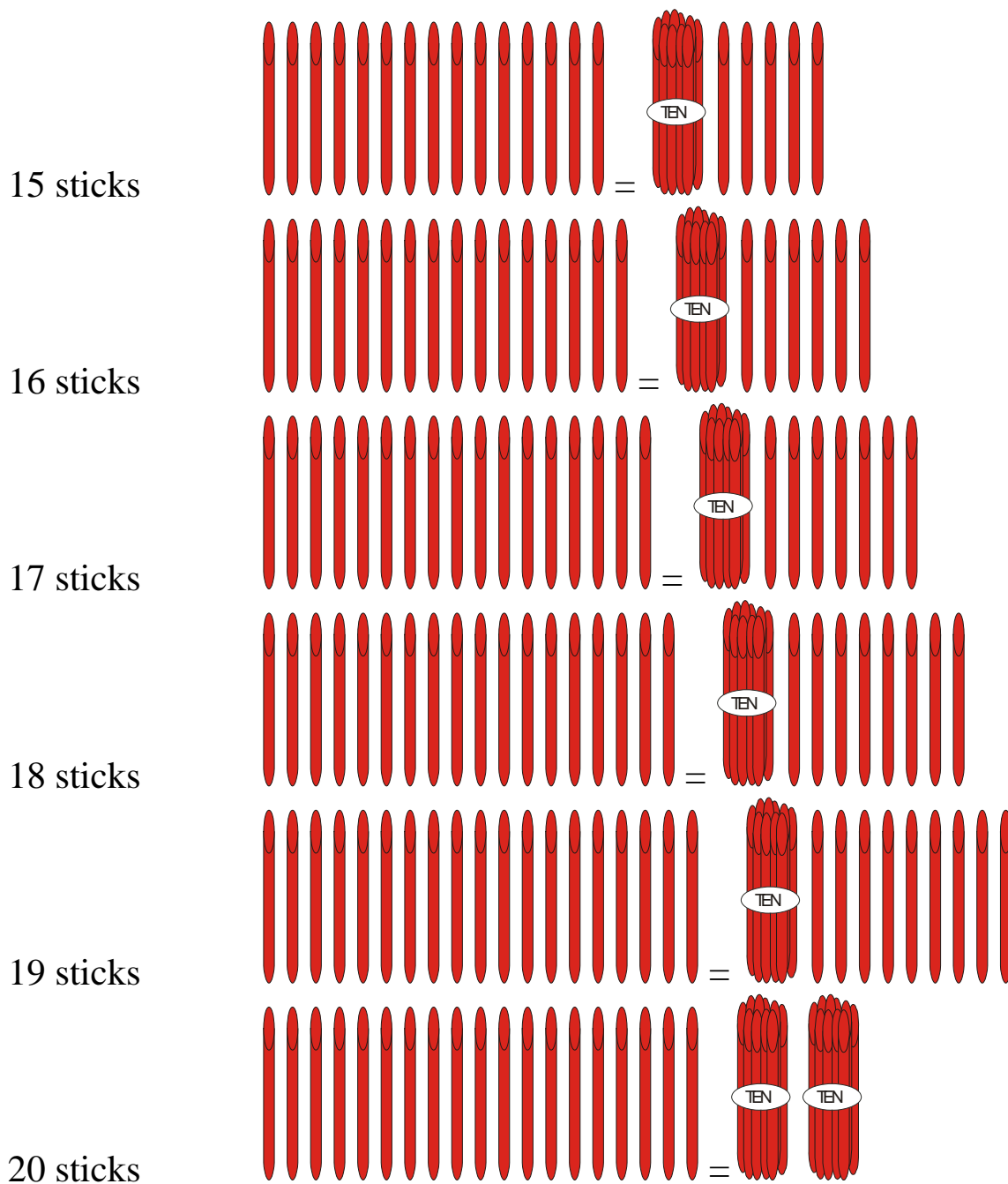
12

17

Concept of place value

As the number of objects increases it becomes cumbersome to count and compare them. If we group a certain number of objects, it becomes easier. Number system we use is based on ten. So we group 10 objects say sticks by forming a bundle of those by a rubber band. Thus, we would have the bundles and loose sticks shown below for different number of sticks





We may think of

Eleven as ten and one more

11 as $10 + 1$

Twelve as ten and two more

12 as $10 + 2$

Thirteen as ten and three more

13 as $10 + 3$

Fourteen is ten and four more

14 as $10 + 4$

Fifteen is ten and five more

15 as $10 + 5$

Sixteen as ten and six more	16 as $10 + 6$
Seventeen as ten and seven more	17 as $10 + 7$
Eighteen as ten and eight more	18 as $10 + 8$
Nineteen as ten and nine more	19 as $10 + 9$
Twenty as ten and ten more or two tens	20 as $10 + 10$

The objects can now be counted by forming groups of ten e.g. for counting more than ten sticks first form bundles of ten sticks by using rubber bands and counting the loose sticks. If five sticks are left over after forming a bundle of ten then the number of sticks is fifteen as counting $10 + 5 = 15$. Similarly, other collections of 11 to 19 sticks can be counted.

The pictures of objects can be counted in the same manner by enclosing ten objects in a rectangle or oval.

Writing of numbers

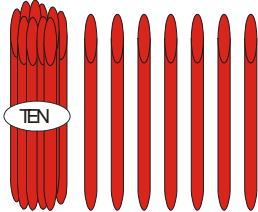
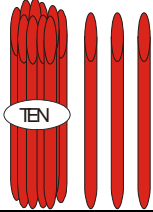
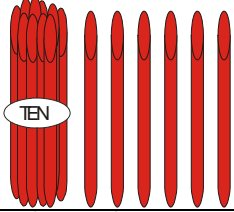
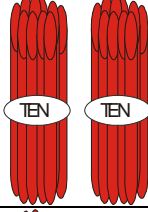
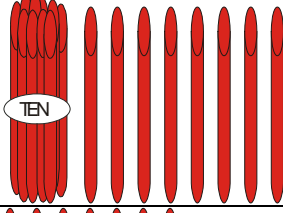
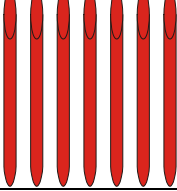
The method of writing numbers is based on grouping by ten; the numeral on the left represents the numbers of tens and the numeral on the right the number of ones. This enables us to write all numbers by learning only ten numerals - 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. These are called **digits**.

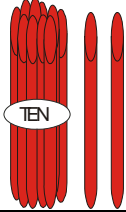

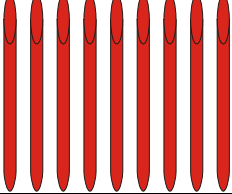
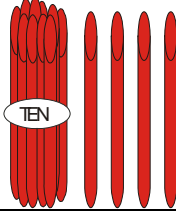
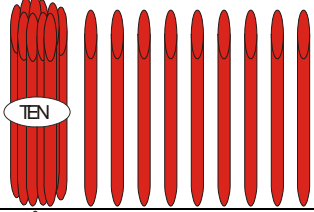
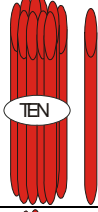
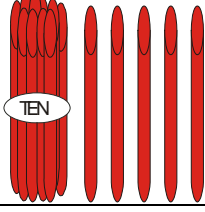
Concept of zero as a place holder

Note if we have ten sticks and make a bundle of ten sticks, we have one bundle of ten sticks and no sticks are left over. One and zero in 10 denotes one bundle of ten sticks and zero loose sticks. Similarly if we have twenty sticks and make bundles of ten sticks we have two bundles of ten sticks and zero loose sticks. Two and zero in 20 denote two bundles of ten sticks and zero loose sticks. Zero here is used as a placeholder so that 1 in 10 or 2 in 20 denote tens.

Exercise 2.6

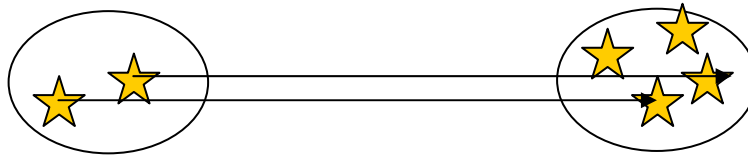
- Show the following numbers of sticks using single sticks and bundles of 10 sticks if the number is greater than 9
5, 8, 4, 9, 7, 3, 15, 13, 17, 11, 10, 14, 18, 12, 20, 19, 0 and 16.
- A number of bundles of ten sticks and single sticks are given below. Write the number of tens and ones and the total number of sticks:

	Number of Tens	Number of Ones	Number
	1	7	17
			
			
			
			
			

Comparing two collections of objects

We can compare two collections of objects by matching each object of one collection with one and a different object of the other collection. The collection in which some objects are left over has more objects.



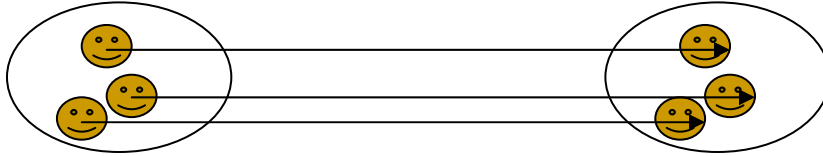
For example, in the collections given above when we match the objects, two objects are left in the collection on the right. Therefore, it has more objects.

The number that gives the number of objects in the larger collection is said to be greater than the number that gives the number of objects in the smaller collection. As there are 4 objects in the larger collection and 2 in the smaller collection we say four is **greater than** two. We write this as $4 > 2$.

The number that gives the number of objects in the smaller collection is said to be less than the number that gives the number of objects in the larger collection. As there are 2 objects in the smaller collection and 4 in the larger collection we say two is **less than** four. We write this as $2 < 4$.

The corner in the symbol always points to the smaller collection.

If all the objects left in two collections are matched as in the collections given below. Both collections have the same number of objects and the number of objects are said to be equal.



Comparing collections in which items are grouped by ten

Grouping by ten also makes comparison of collections that have 10 to 20 objects say sticks easy. If both collections have one ten bundle comparison of only the loose sticks tells which collection has more objects. If one collection has more ten bundles then that collection has greater number of sticks than the other collection that may have larger number of loose sticks.

Ask them to compare collections that have a bundle of 10 sticks and some loose sticks.

Exercise 2.7

Express the following statements in symbols:

Seven is greater than four.	$7 > 4$
Five is less than eight.	
Eleven is greater than nine.	
Sixteen is less than twenty.	
Three is equal to three	
Nineteen is greater than fourteen	
Fifteen is less than nineteen.	

Express the following statements in words:

$7 > 4$	
$5 < 8$	
$10 > 7$	
$19 < 20$	
$16 > 12$	
$12 > 8$	

Exercise 2.8

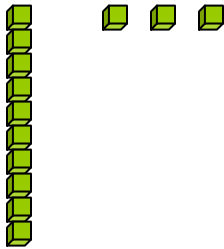
Compare the following numbers by writing $>$, $<$ or $=$ between them:

5	$<$	7
6		4
10		5
9		9
12		16
18		15
9		10
11		15
16		12
14		17
15		19
1		1
13		13
17		19

1		4
4		2
19		20
20		18
10		15
7		0
11		8
10		20
14		10
15		16
14		13
20		19
7		10
4		14

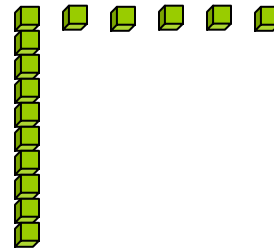
Exercise 2.9

A set of two collections of objects are given below, write the number of objects in each collection and compare the number of objects in the collections by writing $>$, $<$ or $=$ between them:

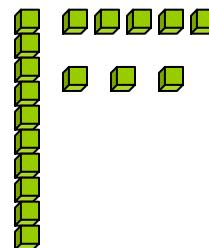
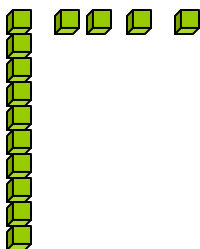
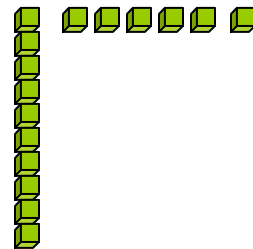
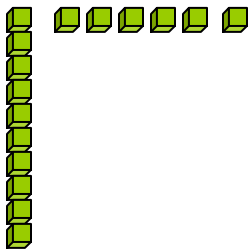
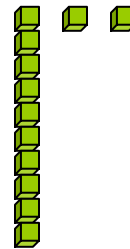
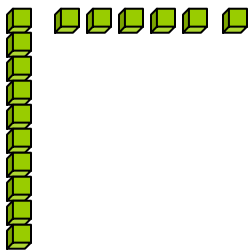


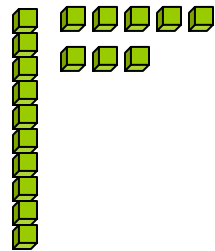
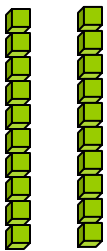
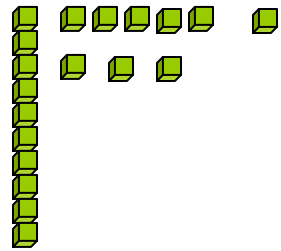
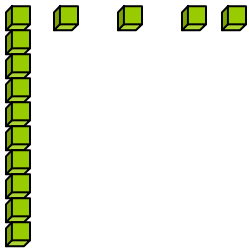
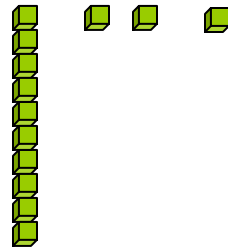
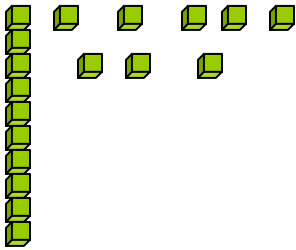
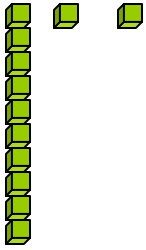
13

$<$



15





UNIT 3

Addition

If we set aside three sticks and two sticks in two separate heaps and combine the two. The combined heap will have five sticks.

Combining $|||$ and $|| \rightarrow |||||$

If we set aside three sticks and add two more sticks to them we will have five sticks.

$|||$ and $||$ more $\rightarrow |||||$

If there are three children playing in a room and two more come and join them, how many children will be there in the room? (Five children)

We express all of these in symbols as $3 + 2 = 5$. This is read as three **plus** two is equal to five. We also say **sum** of 3 and 2 is five. Or when we add 3 and 2 the sum is equal to 5.

Addition of one digit numbers

We can add numbers by any of the following methods.

1. Using objects say sticks. For example to add 3 and 2, we set aside 3 sticks and 2 sticks in two separate heaps then combine the two heaps and count all the sticks. The count would be 5. Therefore $3 + 2 = 5$.
2. Drawing objects say lines. For example to add 3 and 4, draw 3 lines $|||$ and 4 lines $||||$ and count all the lines. The count would be 7. Therefore $3 + 4 = 7$.
3. Counting forward from one number as many numbers in order as the second number. The last number gives the sum. For example to add 4 and 2, we count forward 2 numbers 5 and 6. As the last number is 6, therefore $4 + 2 = 6$. Verify $4 + 2 = 6$.
4. Verify
 $2 + 1 = 1 + 2 = 3$.

$$3 + 2 = 2 + 3 = 5.$$

$$4 + 2 = 2 + 4 = 6$$

$$4 + 3 = 3 + 4 = 7$$

These show that order in which numbers are added does not matter.

Therefore, we can count forward from larger number as many numbers in order as the smaller number. The last number gives the sum. For example to add 2 and 6, instead of counting forward 6 numbers from 2 - 3, 4, 5, 6, 7, and 8 we can count forward 2 numbers from 6 - 7 and 8.

Why is this better?

5. Memorizing addition facts. The sum of any two one-digit numbers is called an addition fact. This is aided by some generalizations:

As adding 0 to a number is the same as not counting any number from it, therefore any number + 0 = the number.

Any number + 1 = the number that comes just after it.

As the sum of two numbers in any order is the same we can use some memorized facts to find the others. For example if we remember $7 + 2 = 9$, then as $2 + 7$ is the same as $7 + 2$, therefore $2 + 7 = 9$

Exercise 3.1

1. Set aside two separate heaps of the following number of sticks. Combine the two and find the number of sticks in the combined heap. Write it against the numbers.

2, 2. →

3, 2. →

7, 2. →

8, 3. →

6, 5. →

4, 5. →

6, 8. →

8, 5. →

8, 4. →

7, 8. →

2. Set aside a heap of the number of sticks given on the left and add to it the number of sticks given on the right and find the total number of sticks. Write it against the numbers.

6, 1 → 7

2, 4 →

4, 5 →

8, 2 →

5, 3 →

4, 6 →

5, 2 →

4, 5 →

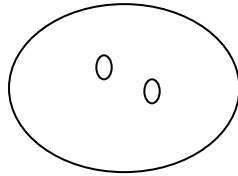
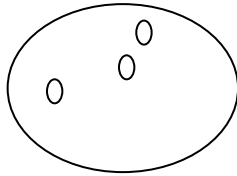
8, 8 →

6, 4 →

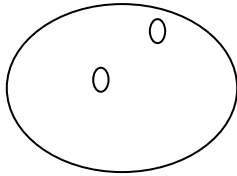
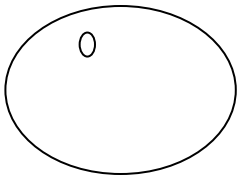
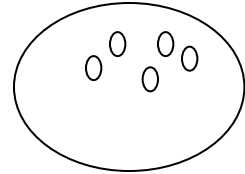
9, 8 →

Exercise 3.2

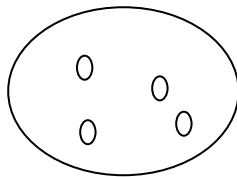
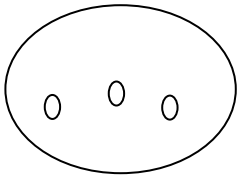
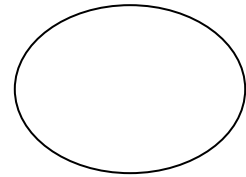
In the following questions, draw the number of objects in combined collection on the right of \rightarrow sign when objects in two collections on the left side are combined:



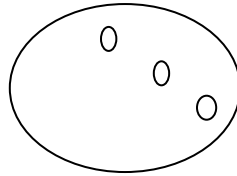
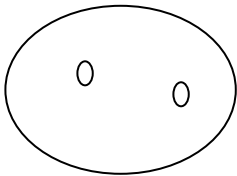
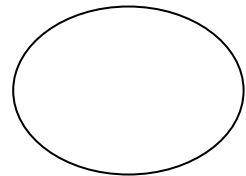
\rightarrow



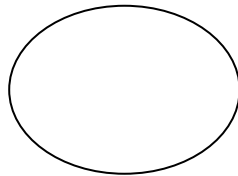
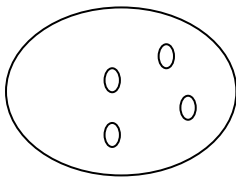
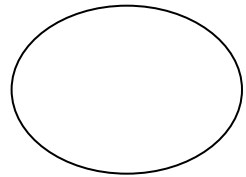
\rightarrow



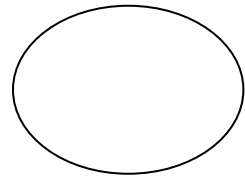
\rightarrow



\rightarrow



\rightarrow



Exercise 3.3

Read and verify the following addition statements

1. $4 + 3 = 7$

2. $8 + 2 = 10$

3. $7 + 4 = 11$

4. $4 + 7 = 11$

5. $6 + 6 = 12$

6. $5 + 7 = 12$

7. $8 + 5 = 13$

8. $5 + 9 = 14$

9. $6 + 9 = 15$

10. $8 + 9 = 17$

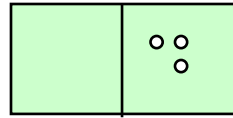
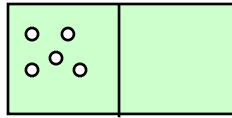
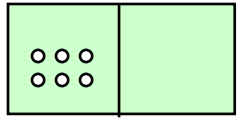
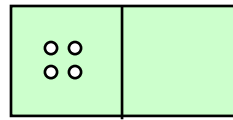
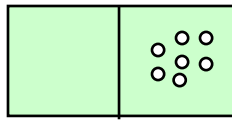
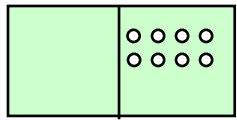
11. $9 + 7 = 16$

12. $7 + 0 = 7$

13. $8 + 7 = 15$

14. $9 + 9 = 18$

15. The dots on the two parts of these dominoes add to 10.
Fill in the dots in the blank parts.



Exercise 3.4

Add the following numbers. You may use sticks or draw lines.

1. 1 + 2 =

2. 2 + 4 =

3. 6 + 3 =

4. 4 + 4 =

5. 2 + 3 =

6. 5 + 4 =

7. 6 + 2 =

8. 7 + 5 =

9. 6 + 8 =

10. 9 + 4 =

11. 8 + 7 =

12. 7 + 6 =

13. 8 + 5 =

14. 5 + 7 =

15. 8 + 8 =

Exercise 3.5

Add the following numbers by counting forward:

$$1. \quad 3 \quad + \quad 1 \quad =$$

$$2. \quad 4 \quad + \quad 2 \quad =$$

$$3. \quad 8 \quad + \quad 1 \quad =$$

$$4. \quad 5 \quad + \quad 3 \quad =$$

$$5. \quad 7 \quad + \quad 2 \quad =$$

$$6. \quad 9 \quad + \quad 2 \quad =$$

$$7. \quad 4 \quad + \quad 3 \quad =$$

$$8. \quad 6 \quad + \quad 4 \quad =$$

$$9. \quad 5 \quad + \quad 4 \quad =$$

$$10. \quad 12 \quad + \quad 2 \quad =$$

$$11. \quad 10 \quad + \quad 5 \quad =$$

$$12. \quad 5 \quad + \quad 5 \quad =$$

$$13. \quad 7 \quad + \quad 5 \quad =$$

$$14. \quad 9 \quad + \quad 4 \quad =$$

$$15. \quad 7 \quad + \quad 6 \quad =$$

Exercise 3.6

Add the following numbers:

$5 + 1 = 6$

$1 + 5 = 6$

$3 + 4 = \underline{\quad}$

$4 + 3 = \underline{\quad}$

$2 + 6 = \underline{\quad}$

$6 + 2 = \underline{\quad}$

$1 + 2 = \underline{\quad}$

$2 + 1 = \underline{\quad}$

$2 + 3 = \underline{\quad}$

$3 + 2 = \underline{\quad}$

$3 + 5 = \underline{\quad}$

$5 + 3 = \underline{\quad}$

$6 + 4 = \underline{\quad}$

$4 + 6 = \underline{\quad}$

$8 + 1 = \underline{\quad}$

$1 + 8 = \underline{\quad}$

$6 + 3 = \underline{\quad}$

$3 + 6 = \underline{\quad}$

$8 + 4 = \underline{\quad}$

$4 + 8 = \underline{\quad}$

What did you notice?

Exercise 3.7

Add the following numbers:

$$5 + 0 = 5$$

$$3 + 0 =$$

$$4 + 0 =$$

$$2 + 0 =$$

$$1 + 0 =$$

$$8 + 0 =$$

$$7 + 0 =$$

$$9 + 0 =$$

$$6 + 0 =$$

$$0 + 0 =$$

What did you notice?

Add the following numbers:

$$1 + 1 = 2$$

$$2 + 1 =$$

$$3 + 1 =$$

$$4 + 1 =$$

$$5 + 1 =$$

$$6 + 1 =$$

$$7 + 1 =$$

$$8 + 1 =$$

$$9 + 1 =$$

$$12 + 1 =$$

$$15 + 1 =$$

$$17 + 1 =$$

What did you notice?

Exercise 3.8

2, and 3Facts

$$\begin{array}{r} 1 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +2 \\ \hline \end{array}$$

$$\hline$$

$$\begin{array}{r} 7 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +3 \\ \hline \end{array}$$

$$\hline$$

$$\begin{array}{r} 4 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +3 \\ \hline \end{array}$$

$$\hline$$

4 and 5 Facts

$$\begin{array}{r} 1 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +5 \\ \hline \end{array}$$

6 and 7 Facts

$$\begin{array}{r} 1 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} \\ \hline \end{array}$$

8 and 9 Facts

$$\begin{array}{r} 8 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} \hline \end{array}$$

$$\begin{array}{r} 8 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} \hline \end{array}$$

$$\begin{array}{r} 9 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} \hline \end{array}$$

Mastery test on addition facts

$$\begin{array}{r} 4 \\ +3 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 5 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ +6 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +8 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +9 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ +3 \\ \hline \end{array}$$

$$\hline$$

$$\hline$$

$$\hline$$

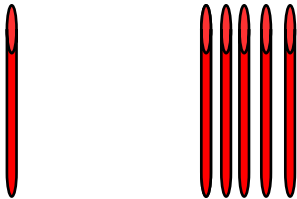
Exercise 3.10

1. Aruna had 5 rupees; her mother gave her 5 rupees. How many Rupees does she have now?
2. Anuj had 4 comic books; he got 5 comic books on his birthday. How many comic books does he have now?
3. Sunita is 3 years older than his brother. If her brother is 6 years old, what is Sunita's age?
4. Gaurav bought a book costing 13 rupees and a notebook costing 3 rupees. How much did he spend in all?
5. Vijay is 8 kg heavier than his brother. If his brother's weight is 5 kg, how much does Vijay weigh?
6. Sadhna climbed 9 steps and then 4 more steps after a turn. How many steps did she climb in all?
7. Rahul's mother bought 8 bananas and 6 guavas. How many fruits did she buy?
8. There are 8 girls and 8 boys in a group song. How many children are there in the group song?
9. There were 5 crows sitting on a tree, 6 more crows came and joined them. How many crows are there on the tree now?

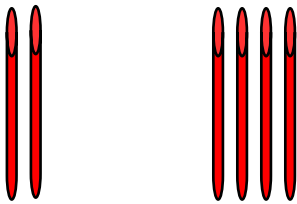
Exercise 3.11

Divide the following number of sticks in two collections in as many ways as you can and write the corresponding addition facts:

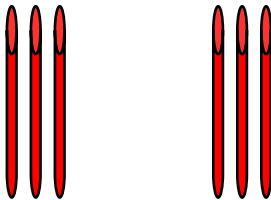
6 – Six sticks can be divided into two collections in following manner, which show



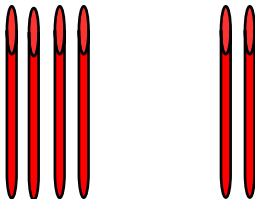
$$1 + 5 = 6$$



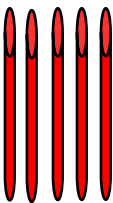
$$2 + 4 = 6$$



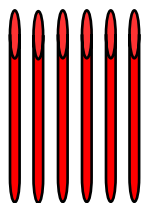
$$3 + 3 = 6$$



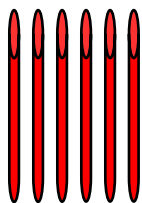
$$4 + 2 = 6$$



$$5 + 1 = 6$$



$$6 + 0 = 6$$



$$0 + 6 = 6$$

5

8

10

UNIT 4

Subtraction

Concept of subtraction

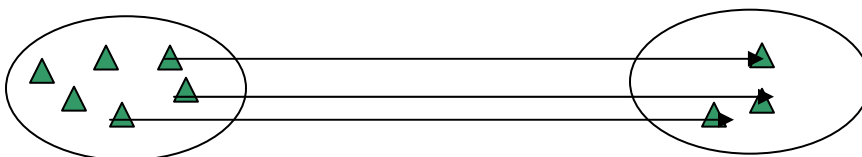
Set aside 6 sticks and take away 3 sticks from these, how many sticks are left. (3 sticks)

If we have 3 cups and 6 saucers how many cups would be without saucers? (3)

If we draw 6 lines and strike off 3 of these lines how many lines are left.

| | | + + +

Match objects in the two collections of objects given below by drawing lines, how many objects are left in the collection on the right? (3)



If there are 6 birds sitting on a tree and 3 fly away, how many birds are left? (3)

We can represent all of these by a **subtraction statement**

$6 - 3 = 3$. We read this, as six **minus** three is equal to three.

We can also say six is 3 more than 3 or difference between 6 and 3 is 3.

Subtraction of numbers where the larger number does not exceed 18

We can subtract numbers by

1. Use of objects such as sticks/chips/connecting cubes. For example to subtract 3 from 7 set aside 7 sticks, take away 3 from these and count the remaining ones. As the count is 4, therefore $7-3 = 4$.
2. Use of lines. For subtraction of 3 from 7; draw 7 lines |||||, then strike off 3 lines |||++ and count the remaining ones. As the count of those is 4. Therefore $7 - 3 = 4$.
3. Counting back as many digits as the number to be subtracted, the last number gives the difference. For example to subtract 3 from 6 we count back 3 numbers in order 5, 4, 3. The last number 3 gives the difference. Verify $6 - 3 = 3$.
4. Memorizing subtraction facts. This can be aided by some generalizations e.g. subtracting 0 from any number is the number, subtracting 1 from any number gives the number that comes just before it and learning related addition and subtraction facts together. For example
 $4+3 = 7$, $3 +4 = 7$, $7 - 4 = 3$, $7 - 3 = 4$

Exercise 4.1

1. Ask children to set aside a certain number (1-18) of sticks and then take away a number of sticks (0-9) so that the difference is a one-digit number. Ask them to tell how many sticks are left over.

Ask them to write it in symbols.

Repeat with different numbers e.g. 6, 3; 8, 4; 10, 3, 12, 7; 14, 8; 18, 9, 17, 8.

2. How would you find the difference of 2 and 5 using sticks?
3. Suppose you had 4 sticks, how many sticks you should remove to get a difference of 0?
4. Suppose you had 5 sticks, how many sticks you should remove to get a difference of 5?
5. If you started with 8 sticks, what would be the smallest difference you could get by removing sticks? How would you get it?
6. If you started with 7 sticks, what would be the largest difference you could get by removing sticks? How would you get it? Write a number sentence.

Exercise 4.2

Some lines are given below. If you strike off the number of lines shown against it, how many will remain? Write in the space provided for it:

	Write the number of lines	Strike off from lines given in column 1 the number of lines given below	Write the number of remaining lines
		1	
		2	
		4	
		2	
		4	
		3	
		5	
		6	
		5	
		7	
		6	
		8	
		9	
		5	
		7	
		9	

Exercise 4.3

Read subtraction statements given below and verify those using sticks or lines:

1. $7 - 6 = 1$

2. $3 - 1 = 2$

3. $8 - 4 = 4$

4. $13 - 7 = 6$

5. $16 - 8 = 8$

6. $14 - 7 = 7$

7. $12 - 6 = 6$

8. $17 - 8 = 9$

9. $11 - 5 = 6$

10. $18 - 9 = 9$

11. $10 - 6 = 4$

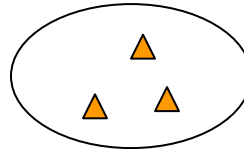
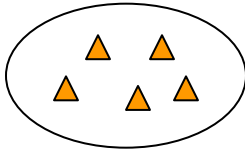
12. $13 - 5 = 8$

13. $12 - 4 = 8$

14. $15 - 9 = 6$

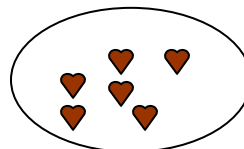
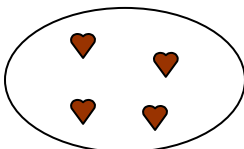
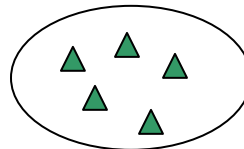
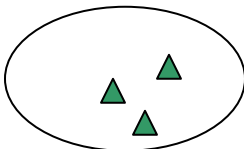
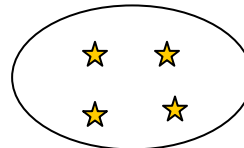
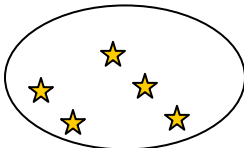
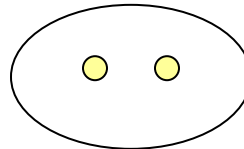
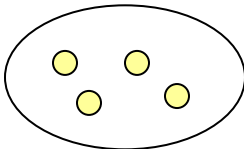
Exercise 4.4

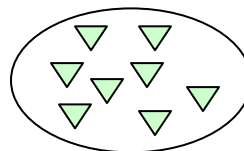
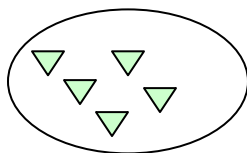
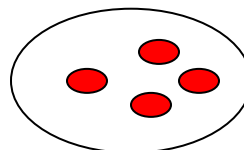
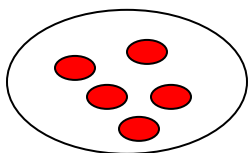
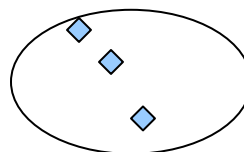
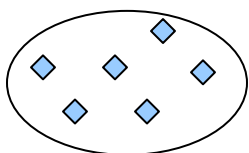
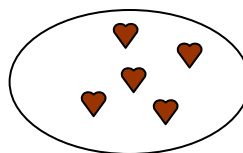
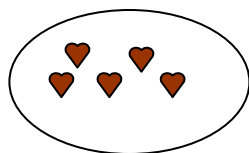
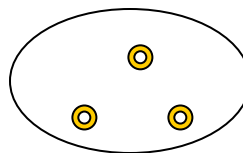
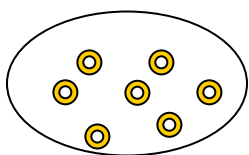
A number of two collections of objects are given below. Compare the two collections and mark a \checkmark under the collection that has more objects. Express the difference between two collections as a Subtraction Statement.



\checkmark

$$5 - 3 = 2$$





Exercise 4.5

Subtract the following numbers by counting back:

$$1. \quad 3 - 1 =$$

$$2. \quad 2 - 1 =$$

$$3. \quad 4 - 2 =$$

$$4. \quad 6 - 1 =$$

$$5. \quad 5 - 2 =$$

$$6. \quad 5 - 3 =$$

$$7. \quad 7 - 1 =$$

$$8. \quad 6 - 3 =$$

$$9. \quad 8 - 2 =$$

$$10. \quad 9 - 3 =$$

$$11. \quad 4 - 2 =$$

$$12. \quad 10 - 4 =$$

$$13. \quad 12 - 4 =$$

$$14. \quad 11 - 2 =$$

$$15. \quad 13 - 3 =$$

Exercise 4.6

Some addition facts are given below. Write the subtraction facts given against them using these addition facts.

1. $4 + 2 = 6.$ $6 - 2 = 4$ $6 - 4 = 2$

2. $2 + 1 = 3$ $3 - 1 =$ $3 - 2 =$

3. $5 + 2 = 7$ $7 - 2 =$ $7 - 5 =$

4. $3 + 3 = 6$ $6 - 3 =$

5. $6 + 2 = 8$ $8 - 2 =$ $8 - 6 =$

6. $4 + 3 = 7$ $7 - 4 =$ $7 - 3 =$

7. $5 + 3 = 8$ $8 - 5 =$ $8 - 3 =$

8. $6 + 3 = 9$ $9 - 6 =$ $9 - 3 =$

9. $5 + 4 = 9$ $9 - 5 =$ $9 - 4 =$

10. $8 + 6 = 14$ $14 - 8 =$ $14 - 6 =$

11. $8 + 7 = 15$ $15 - 8 =$ $15 - 7 =$

12. $7 + 6 = 13$ $13 - 6 =$ $13 - 7 =$

13. $9 + 6 = 15$ $15 - 9 =$ $15 - 6 =$

14. $8 + 9 = 17$ $17 - 9 =$ $17 - 8 =$

15. $9 + 9 = 18$ $18 - 9 =$

Exercise 4.7

Some subtraction facts are given below. Write the subtraction facts given against them using these subtraction facts.

1. $7 - 4 = 3$ $7 - 3 = 4$

2. $4 - 1 = 3$ $4 - 3 =$

3. $5 - 2 = 3$ $5 - 3 =$

4. $9 - 2 = 7$ $9 - 7 =$

5. $10 - 4 = 6$ $10 - 6 =$

6. $11 - 4 = 7$ $11 - 7 =$

7. $11 - 5 = 6$ $11 - 6 =$

8. $12 - 3 = 9$ $12 - 9 =$

9. $12 - 5 = 7$ $12 - 7 =$

10. $13 - 6 = 7$ $13 - 7 =$

11. $13 - 4 = 9$ $13 - 9 =$

12. $15 - 7 = 8$ $15 - 8 =$

13. $16 - 7 = 9$ $16 - 9 =$

14. $17 - 8 = 9$ $17 - 9 =$

Exercise 4.8

Subtract

3

-2

6

-3

8

-7

4

-2

6

-4

9

-8

5

-2

8

-4

10

- 9

6

-2

5

-4

7

-2

4

-3

6

-5

8

-2

5

-3

7

-6

9

-2

Subtract

10

- 2

7

-3

8

-3

9

-3

10

- 3

7

-4

9

-4

10

- 4

12

- 4

7

-5

8

-5

9

-5

10

- 5

11

- 5

8

-6

9

-6

10

- 6

11

- 6

Subtract

12

- 6

9

- 7

10

- 7

16

- 8

12

- 8

10

- 8

11

- 2

12

- 3

11

- 3

13

- 4

11

- 4

14

- 5

13

- 5

12

- 5

15

- 6

14

- 6

13

- 6

16

- 7

Subtract

$$\begin{array}{r} 15 \\ - 7 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 16 \\ - 9 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \\ - 7 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \\ - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ - 9 \\ \hline \end{array}$$

$$\begin{array}{r} 13 \\ - 7 \\ \hline \end{array}$$

$$\begin{array}{r} 13 \\ - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \\ - 9 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ - 7 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 13 \\ - 9 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ - 7 \\ \hline \end{array}$$

$$\begin{array}{r} 18 \\ - 9 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ - 9 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \\ - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \\ - 9 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ - 9 \\ \hline \end{array}$$

Mastery test on subtraction facts

Subtract

7

- 3

6

- 4

5

- 1

6

- 2

7

- 1

9

- 1

7

- 4

12

- 7

10

- 1

11

- 3

10

- 4

12

- 3

10

- 3

9

- 3

13

- 5

14

- 5

15

- 8

13

- 6

$$\begin{array}{r} 6 \\ - 3 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ - 5 \\ \hline \end{array}$$

$$\begin{array}{r} 13 \\ - 4 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ - 2 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ - 6 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ - 7 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ - 4 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ - 6 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \\ - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ - 9 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \\ - 7 \\ \hline \end{array}$$

$$\begin{array}{r} 13 \\ - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ - 5 \\ \hline \end{array}$$

$$\begin{array}{r} 16 \\ - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 16 \\ - 9 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ - 5 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \\ - 9 \\ \hline \end{array}$$

$$\hline$$

$$\hline$$

$$\hline$$

Exercise 4.9

1. Rita had 4 sweets she gave 2 to her brother. How many sweets does she have now?
2. Abhay bought 6 balloons 3 got burst. How many balloons does he have now?
3. Runa had 10 rupees her mother gave her 5 rupees. How many rupees does she have now?
4. Gaurav has 5 rupees he wants to buy a chocolate costing 11 rupees. How many more rupees does he need?
5. Sunita has 8 frocks and Sushma has 6 frocks. Who has more frocks and how many more?
6. Sanjay wants to collect 10 caps of Campa cola to buy a gift. He has already collected 7 caps how many more does he need?
7. There were 12 children in a birthday party. If there were 7 girls, how many boys were there?
8. Rita had 14 rupees she gave 5 rupees to her brother. How many rupees does she have now?
9. There are 7 girls and 16 boys in a class. Are there more girls or boys and how many more?
10. I am a number 4 less than 9, what am I?

Exercise 4.10

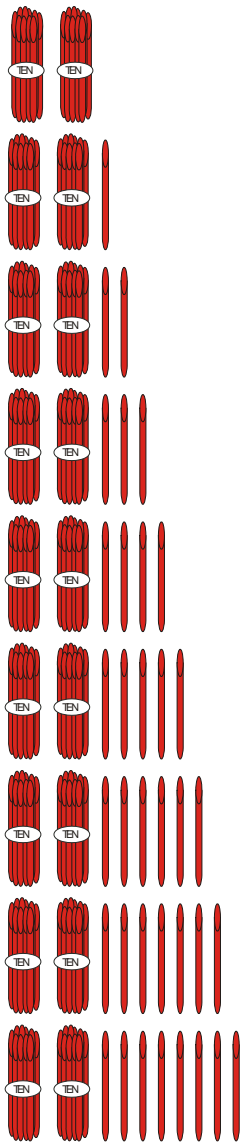
In each question the numbers on the right are obtained from two numbers on the left in the first three examples in the same way, suggest what it is and use the same to answer the last part of each question.

1. $4, 1 \rightarrow 5$
 $5, 1 \rightarrow 6$
 $8, 1 \rightarrow 9$
 $7, 1 \rightarrow \underline{\hspace{1cm}}$
2. $4, 0 \rightarrow 4$
 $5, 0 \rightarrow 5$
 $7, 0 \rightarrow 7$
 $9, 0 \rightarrow \underline{\hspace{1cm}}$
3. $1, 1 \rightarrow 2$
 $1, 2 \rightarrow 3$
 $3, 2 \rightarrow 5$
 $2, 2 \rightarrow \underline{\hspace{1cm}}$
4. $4, 1 \rightarrow 3$
 $5, 1 \rightarrow 4$
 $6, 1 \rightarrow 5$
 $8, 1 \rightarrow$
5. $2, 3 \rightarrow 5$
 $3, 4 \rightarrow 7$
 $4, 3 \rightarrow 7$
 $5, 3 \rightarrow \underline{\hspace{1cm}}$
6. $4, 7 \rightarrow 3$
 $6, 4 \rightarrow 2$
 $8, 5 \rightarrow 3$
 $5, 2 \rightarrow \underline{\hspace{1cm}}$

UNIT 5

Numbers 20 to 100

We have learnt numbers from 0 to 20. The numbers can be extended further to enable us to find the number of objects in larger collections as the number of objects increase by one. The number names as number of objects increases by one are given below:



20

Twenty

$$20 + 1 = 21$$

Twenty one

$$20 + 2 = 22$$

Twenty two

$$20 + 3 = 23$$

Twenty three

$$20 + 4 = 24$$

Twenty four

$$20 + 5 = 25$$

Twenty five

$$20 + 6 = 26$$

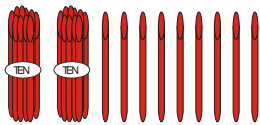
Twenty six

$$20 + 7 = 27$$

Twenty seven

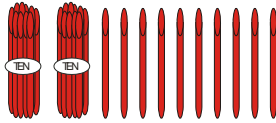
$$20 + 8 = 28$$

Twenty eight



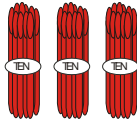
$$20 + 9 = 29$$

Twenty nine

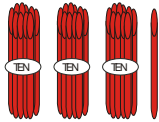


$$20 + 10 = 30$$

Thirty or

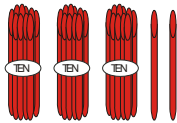


Three tens



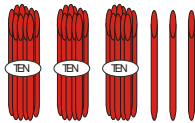
$$30 + 1 = 31$$

Thirty one



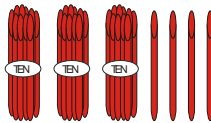
$$30 + 2 = 32$$

Thirty two



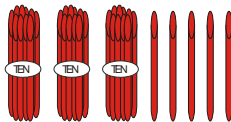
$$30 + 3 = 33$$

Thirty three



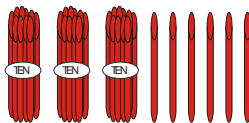
$$30 + 4 = 34$$

Thirty four



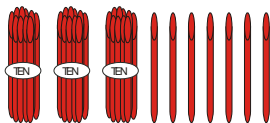
$$30 + 5 = 35$$

Thirty five



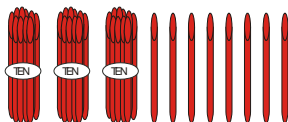
$$30 + 6 = 36$$

Thirty six



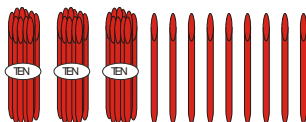
$$30 + 7 = 37$$

Thirty seven



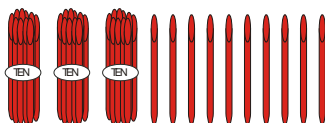
$$30 + 8 = 38$$

Thirty eight



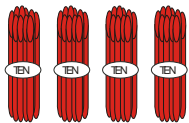
$$30 + 9 = 39$$

Thirty nine

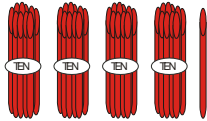


$$30 + 10 = 40$$

Forty or

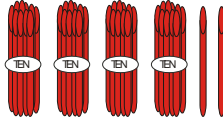


Four tens



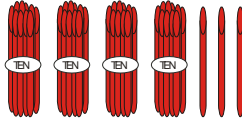
$$40 + 1 = 41$$

Forty one



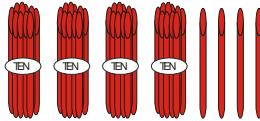
$$40 + 2 = 42$$

Forty two



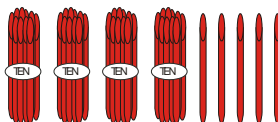
$$40 + 3 = 43$$

Forty three



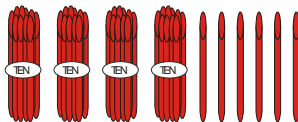
$$40 + 4 = 44$$

Forty four



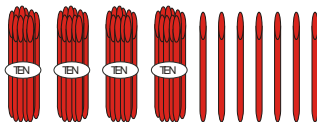
$$40 + 5 = 45$$

Forty five



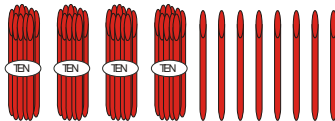
$$40 + 6 = 46$$

Forty six



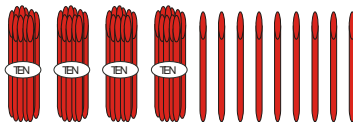
$$40 + 7 = 47$$

Forty seven



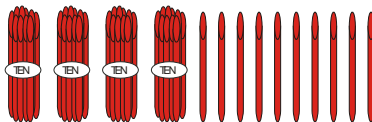
$$40 + 8 = 48$$

Forty eight



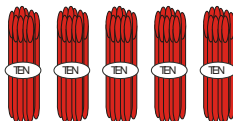
$$40 + 9 = 49$$

Forty nine



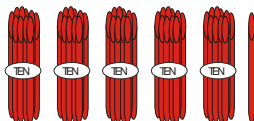
$$40 + 10 = 50$$

Fifty or



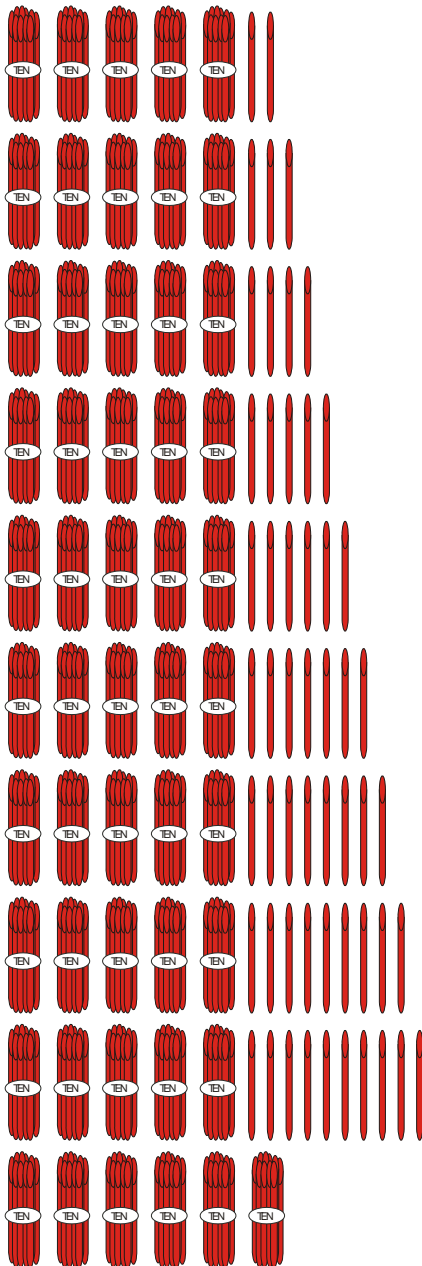
50

Fifty

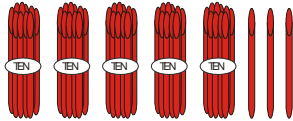


$$50 + 1 = 51$$

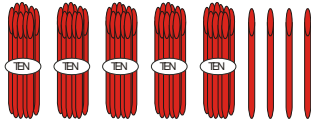
Fifty one



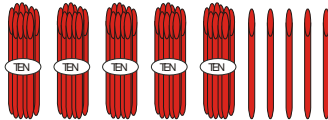
$$50 + 2 = 52\text{-Fifty two}$$



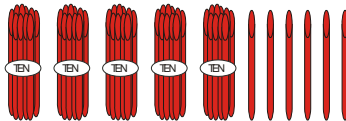
$$50 + 3 = 53\text{-Fifty three}$$



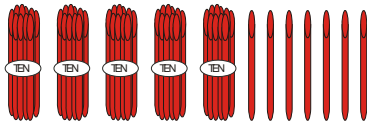
$$50 + 4 = 54\text{-Fifty four}$$



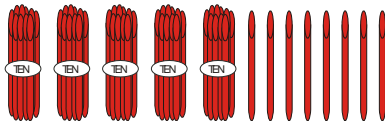
$$50 + 5 = 55\text{-Fifty five}$$



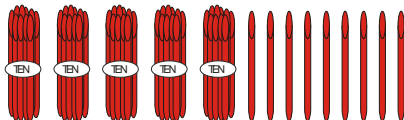
$$50 + 6 = 56\text{-Fifty six}$$



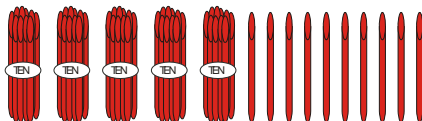
$$50 + 7 = 57\text{-Fifty seven}$$



$$50 + 8 = 58\text{-Fifty eight}$$

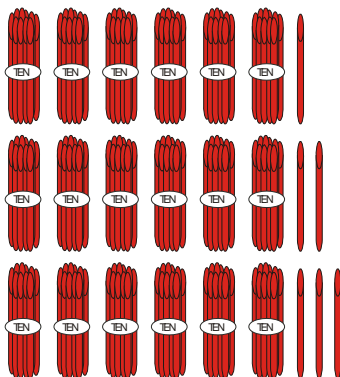


$$50 + 9 = 59\text{-Fifty nine}$$

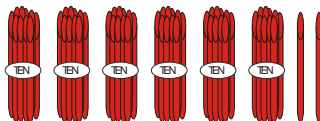


$$50 + 10 = 60\text{-Sixty or}$$

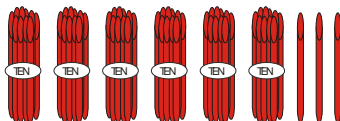
6 Tens



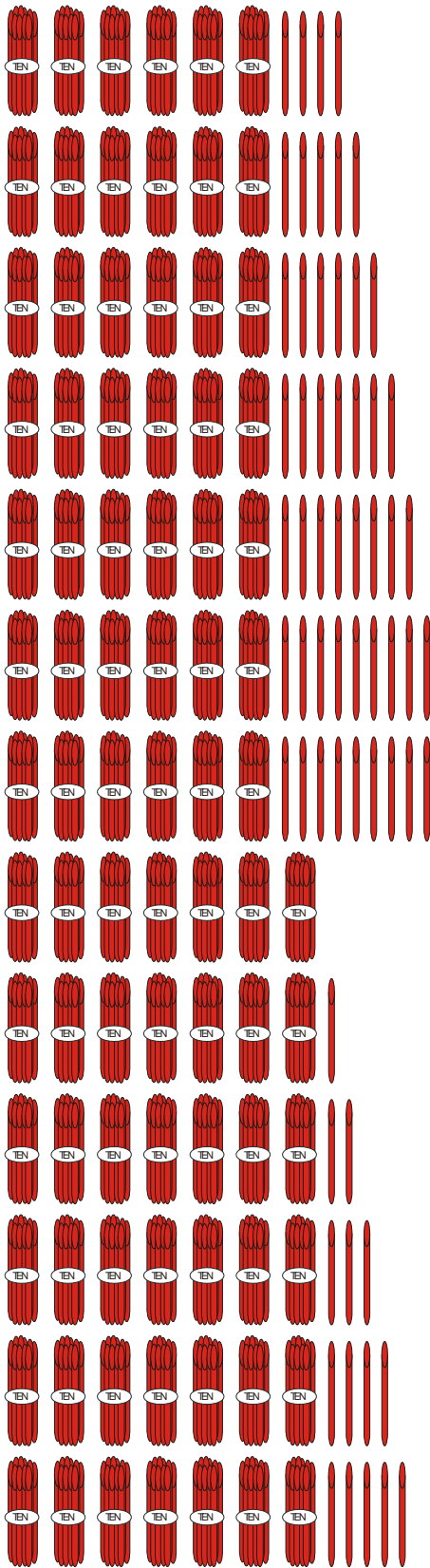
$$60 + 1 = 61\text{-Sixty one}$$



$$60 + 2 = 62\text{-Sixty two}$$



$$60 + 3 = 63\text{-Sixty three}$$



$$60 + 4 = 64\text{-Sixty four}$$

$$60 + 5 = 65\text{-Sixty five}$$

$$60 + 6 = 66\text{-Sixty six}$$

$$60 + 7 = 67\text{-Sixty seven}$$

$$60 + 8 = 68\text{-Sixty eight}$$

$$60 + 9 = 69\text{-Sixty nine}$$

$$60 + 10 = 70 \text{ or}$$

7 Tens

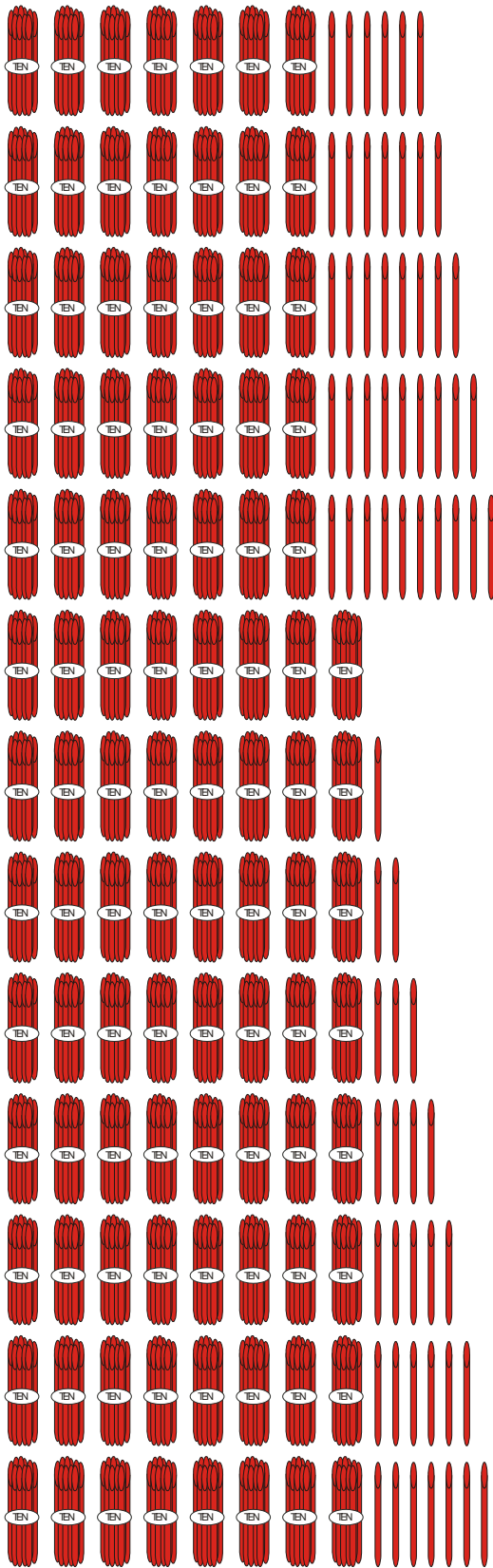
$$70 + 1 = 71\text{-Seventy one}$$

$$70 + 2 = 72\text{-Seventy two}$$

$$70 + 3 = 73\text{-Seventy three}$$

$$70 + 4 = 74\text{-Seventy four}$$

$$70 + 5 = 75\text{-Seventy five}$$



$$70 + 6 = 76\text{-Seventy six}$$

$$70 + 7 = 77\text{-Seventy seven}$$

$$70 + 8 = 78\text{-Seventy eight}$$

$$70 + 9 = 79\text{-Seventy nine}$$

$$70 + 10 = 80\text{-Eighty or}$$

Eight tens

$$80 + 1 = 81\text{-Eighty one}$$

$$80 + 2 = 82\text{-Eighty two}$$

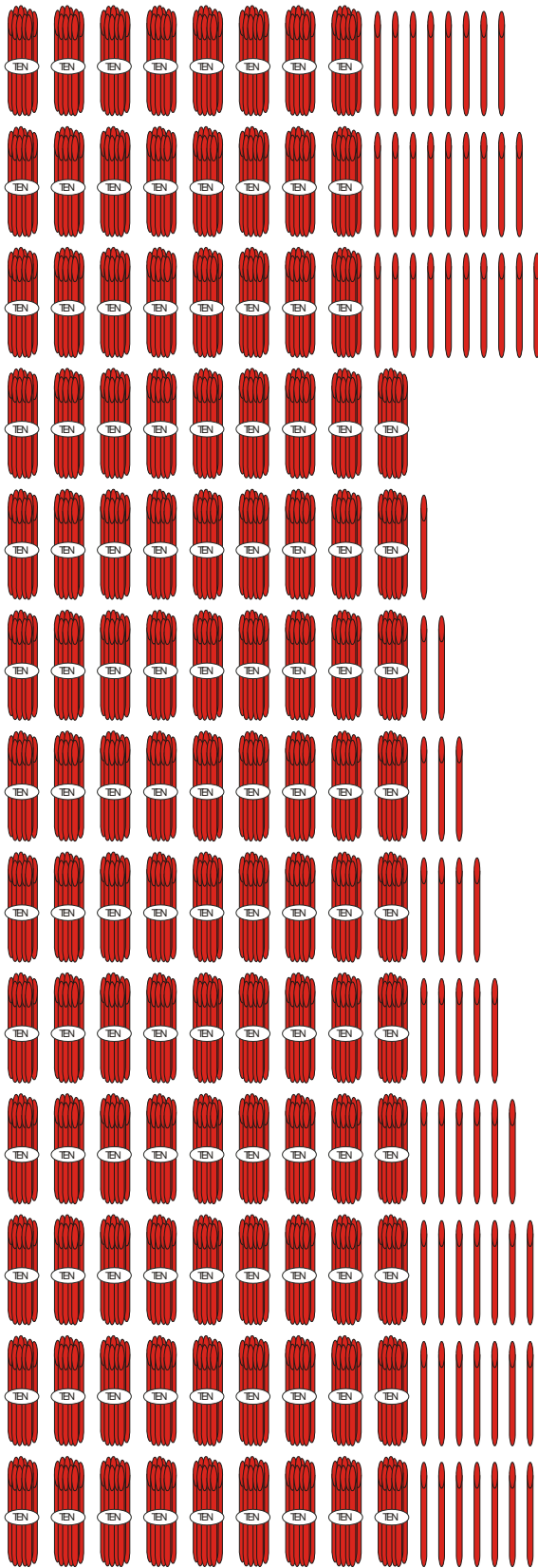
$$80 + 3 = 83\text{-Eighty three}$$

$$80 + 4 = 84\text{-Eighty four}$$

$$80 + 5 = 85\text{-Eighty five}$$

$$80 + 6 = 86\text{-Eighty six}$$

$$80 + 7 = 87\text{-Eighty seven}$$



$$80 + 8 = 88\text{-Eighty eight}$$

$$80 + 9 = 89\text{-Eighty nine}$$

$$80 + 10 = 90 \text{ or}$$

9 Tens

$$90 + 1 = 91\text{-Ninety one}$$

$$90 + 2 = 92\text{-Ninety two}$$

$$90 + 3 = 93\text{-Ninety three}$$

$$90 + 4 = 94\text{-Ninety four}$$

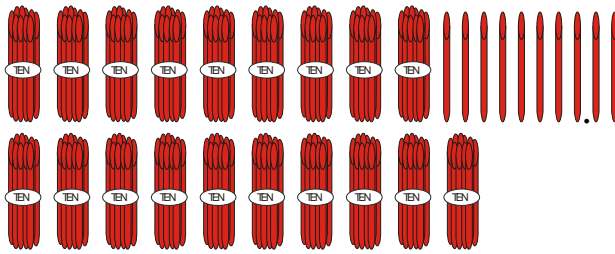
$$90 + 5 = 95\text{-Ninety five}$$

$$90 + 6 = 96\text{-Ninety six}$$

$$90 + 7 = 97\text{-Ninety seven}$$

$$90 + 8 = 98\text{-Ninety eight}$$

$$90 + 9 = 99\text{-Ninety nine}$$



$90 + 10 = 100$ -Hundred or

10 Tens

Writing numbers as number of tens and ones

The number 10 is the same as 1 ten, 20 is the same as 2 tens, 30 is the same as 3 tens and so on. We can also write the numbers as sum of a number of tens and a number of ones. For example $11 = 1 \text{ ten} + 1 \text{ one}$, $24 = 2 \text{ tens} + 4 \text{ ones}$, $85 = 8 \text{ tens} + 5 \text{ ones}$.

The Hundred Table

We can also write the numbers in order from 1 to 100 in a table

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

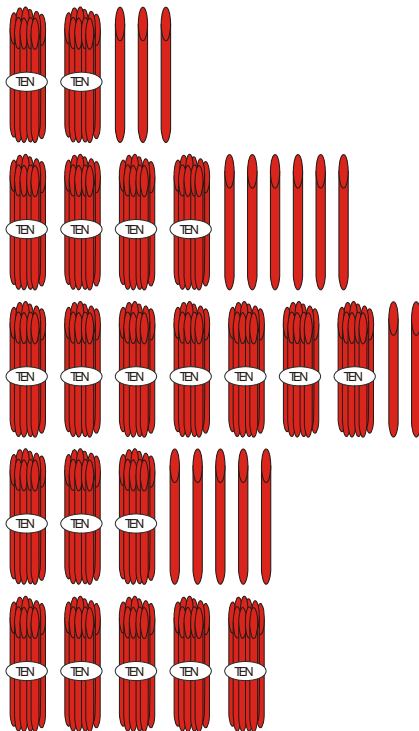
1. Read all the numbers from left to right beginning with first row from 1 to 100. This is called counting from 1 to 100.
2. Read the last column-10, 20, 30, 40, 50, 60, 70, 80, 90 and 100. This is called counting by ten from 10 to 100.
3. Shade every fifth number up to 50 - 5, 10, 15, 20, 25, 30, 40, 45, 50. This is called counting by five from 5 to 50.
4. We can similarly count by two by reading alternate numbers – 2, 4, 6, 8, 10, 12, 14, 16, 18 and 20. This is called counting by two from 2 to 20.

Exercise 5.1

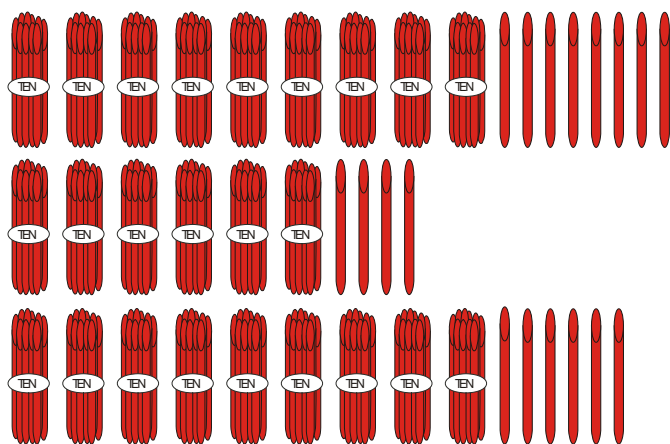
1. Count up to 100. Provide practice in it till students are fluent in it.
2. Write numbers up to 100 in Activity Sheet 5.1.
3. Write missing numbers in the hundred chart

1	2	3		5	6	7	8	9	10
11	12	13	14	15	16		18	19	20
21	22	23		25	26	27	28		30
31	32	33	34	35		37	38	39	40
41	42	43	44		46	47	48	49	
51	52		54	55	56	57	58	59	60
61	62	63	64	65	66		68	69	70
71	72	73		75	76	77	78	79	80
81	82	83	84	85		87	88	89	
91	92	93	94	95	96	97		99	100

4. Count the number of girls and boys in the class.
5. Count numbers by 10 up to 100.
6. Count numbers by 5 up to 50.
7. Count numbers by 2 up to 20.
8. Set aside the following numbers of sticks using bundles of ten-sticks and single sticks.
6, 14, 19, 35, 37, 48, 52, 60,
9. Read the following numbers:
6, 12, 14, 39, 56, 72, 43, 27, 79, 58, 86, 90, 31, 66 and 100.
10. A number of ten bundles of sticks and some loose sticks are given below write the total number of sticks against them:



23



11. Read the following statements:

$$45 = 4 \text{ tens} + 5 \text{ ones.}$$

$$37 = 3 \text{ tens} + 7 \text{ ones.}$$

$$88 = 8 \text{ tens} + 8 \text{ ones.}$$

$$23 = 2 \text{ tens} + 3 \text{ ones.}$$

12. Write the following numbers as sum of tens and ones:

$$35 = 3 \text{ tens} + 5 \text{ ones}$$

$$13 = \underline{\quad} \text{ten} + \underline{\quad} \text{ones}$$

$$45 = \underline{\quad} \text{tens} + \underline{\quad} \text{ones}$$

$$69 = \underline{\quad} \text{tens} + \underline{\quad} \text{ones}$$

$$27 = \underline{\quad} \text{tens} + \underline{\quad} \text{ones}$$

$$75 = \underline{\quad} \text{tens} + \underline{\quad} \text{ones}$$

$$60 = \underline{\quad} \text{tens} + \underline{\quad} \text{ones}$$

$$8 = \underline{\quad} \text{tens} + \underline{\quad} \text{ones}$$

13. Write the numbers for the following:

$$2 \text{ tens} + 5 \text{ ones} = 25$$

$$7 \text{ tens} + 4 \text{ ones} =$$

$$9 \text{ tens} + 9 \text{ ones} =$$

$$6 \text{ tens} + 2 \text{ ones} =$$

$$2 \text{ tens} + 8 \text{ ones} =$$

14. Write the following numbers (To be dictated by the teacher):

9, 18, 23, 38, 54, 67, 90, 82, 46, 59, 41, 75, 14, 28 and 40.

15. Write as many numbers just after the numbers as the squares given in front of it:

6	<input type="text" value="7"/>	<input type="text" value="8"/>	<input type="text" value="9"/>	<input type="text" value="10"/>
12	<input type="text"/>	<input type="text"/>	<input type="text"/>	
19	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
28	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

16. Write as many numbers just before the numbers as the squares given before it:

<input type="text" value="38"/>	<input type="text" value="39"/>	<input type="text" value="40"/>	<input type="text" value="41"/>	42
<input type="text"/>	<input type="text"/>	<input type="text"/>		9
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	12
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	23
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	32

Exercise 5.2

Write numbers
that come just
after the following
numbers

0	
5	
9	
13	
15	
12	
19	
21	
23	
92	
29	
35	
39	
42	
49	
54	
59	
68	
69	
76	
79	
80	
89	
99	

Write numbers
that come just
before the
following

	2
	3
	8
	10
	17
	20
	24
	30
	33
	37
	39
	40
	44
	47
	50
	63
	70
	75
	80
	92
	66
	88
	90
	100

Write numbers
that come between
the following
numbers

1		3
6		8
15		17
36		38
39		41
54		56
70		72
58		60
42		44
36		38
88		90
73		75
20		22
33		35
39		41
42		44
56		58
61		63
64		66
77		79
85		87
89		91
93		95
74		76

Comparison of Numbers

The number that comes later in counting is larger. For example, 31 comes after 23 in counting, therefore 31 is greater than 23. We write it as $31 > 23$. The number that comes earlier in counting is smaller. As 8 comes before 11, 8 is less than 11. We write it as $8 < 11$.

Alternatively, we can express numbers in expanded form and compare the number of tens; a number with larger number of tens is larger. For example to compare 48 and 63, we write

$$48 = 4 \text{ tens} + 8 \text{ ones}$$

$$63 = 6 \text{ tens} + 3 \text{ ones}$$

As the number of tens in 63 is large, $63 > 48$.

If the number of tens in both numbers is the same, then the number with larger number of ones is larger. For example, 36 and 32 both have 3 tens, but 36 has more ones, therefore $36 > 32$.

Exercise 5.3

Compare the following numbers by writing $</>/=$ between the following numbers:

9		4
22		26
38		35
99		100
21		25
36		22
14		17
15		19
1		4

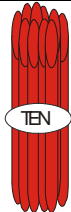
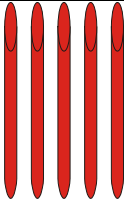
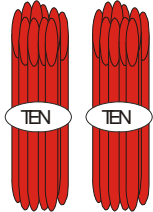

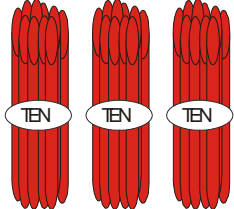
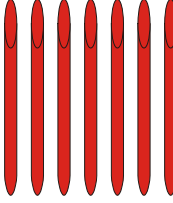
5		7
19		18
36		42
78		72
48		50
35		61
85		72
17		7
56		56

UNIT 6

Addition of Two Digit Numbers

We can add two digit numbers by

1. Using sticks-For example to add 15 and 22, we set aside 1 bundle of ten sticks and 5 sticks for 15 sticks and 2 bundles of ten sticks and 2 sticks for 22 sticks combine the two and count the bundles of ten sticks and single sticks in the combined group and find the number.

Numbers	Tens	Ones	Tens	Ones
15			1	5
+22			2	2
			3	7

As there are 3 tens and 7 ones in the combined group, therefore
 $22 + 15 = 37$

2. Express the numbers in tens and ones and add the tens and ones

$$22 = 2 \text{ Tens} + 2 \text{ Ones}$$

$$+ 15 = 1 \text{ Ten} + 5 \text{ Ones}$$

$$3 \text{ Tens} + 7 \text{ Ones} = 37.$$

3. Add the ones and tens remembering that the right digit represents the ones and left digit represents the tens.

TO

15

+22

37

Exercise 8.1

Set aside the following number of sticks using bundles of ten sticks and single sticks combine the two groups and find the number of sticks in the combined group:

1. 14, 25

2. 23, 33

3. 45, 32

4. 52, 37

5. 70, 28

6. 33, 64

7. 80, 9

8. 45, 34

9. 67, 11

10. 90, 8

Exercise 8.2

Add the following numbers by first writing the numbers in expanded form and adding the ones and tens:

1. $12 = 1 \text{ Ten} + 2 \text{ Ones}$
 $+54 = 5 \text{ Tens} + 4 \text{ Ones}$

$$= 6 \text{ Tens} + 6 \text{ Ones} = 66$$

2. $35 = \underline{\hspace{1cm}} \text{ Tens} + \underline{\hspace{1cm}} \text{ Ones}$
 $+40 = \underline{\hspace{1cm}} \text{ Tens} + \underline{\hspace{1cm}} \text{ Ones}$

$$\underline{\hspace{1cm}} \text{ Tens} + \underline{\hspace{1cm}} \text{ Ones} =$$

3. $46 = \underline{\hspace{1cm}} \text{ Tens} + \underline{\hspace{1cm}} \text{ Ones}$
 $+23 = \underline{\hspace{1cm}} \text{ Tens} + \underline{\hspace{1cm}} \text{ Ones}$

$$\underline{\hspace{1cm}} \text{ Tens} + \underline{\hspace{1cm}} \text{ Ones} =$$

4. $63 = \underline{\hspace{1cm}} \text{ Tens} + \underline{\hspace{1cm}} \text{ Ones}$
 $+35 = \underline{\hspace{1cm}} \text{ Tens} + \underline{\hspace{1cm}} \text{ Ones}$

$$\underline{\hspace{1cm}} \text{ Tens} + \underline{\hspace{1cm}} \text{ Ones} =$$

5. $45 = \underline{\hspace{1cm}} \text{ Tens} + \underline{\hspace{1cm}} \text{ Ones}$
 $+43 = \underline{\hspace{1cm}} \text{ Tens} + \underline{\hspace{1cm}} \text{ Ones}$

$$\underline{\hspace{1cm}} \text{ Tens} + \underline{\hspace{1cm}} \text{ Ones} =$$

Exercise 8.3

Add

$$\begin{array}{r} \text{T O} \\ 23 \\ +42 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ +24 \\ \hline \end{array}$$

$$\begin{array}{r} 31 \\ +43 \\ \hline \end{array}$$

$$\begin{array}{r} 30 \\ +20 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T O} \\ 40 \\ +32 \\ \hline \end{array}$$

$$\begin{array}{r} 41 \\ +24 \\ \hline \end{array}$$

$$\begin{array}{r} 74 \\ +15 \\ \hline \end{array}$$

$$\begin{array}{r} 45 \\ +34 \\ \hline \end{array}$$

$$\begin{array}{r} 54 \\ +21 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T O} \\ 65 \\ +24 \\ \hline \end{array}$$

$$\begin{array}{r} 75 \\ +12 \\ \hline \end{array}$$

$$\begin{array}{r} 85 \\ +14 \\ \hline \end{array}$$

$$\begin{array}{r} 66 \\ +12 \\ \hline \end{array}$$

$$\begin{array}{r} 80 \\ +10 \\ \hline \end{array}$$

$$\begin{array}{r} \text{TO} \\ 32 \\ +20 \\ \hline \end{array}$$

$$\begin{array}{r} \hline 62 \\ +35 \\ \hline \end{array}$$

$$\begin{array}{r} \hline 32 \\ +47 \\ \hline \end{array}$$

$$\begin{array}{r} \hline 46 \\ +2 \\ \hline \end{array}$$

$$\begin{array}{r} \hline 13 \\ +5 \\ \hline \end{array}$$

$$\begin{array}{r} \hline 24 \\ +54 \\ \hline \end{array}$$

$$\hline$$

$$\begin{array}{r} \text{TO} \\ 74 \\ +23 \\ \hline \end{array}$$

$$\begin{array}{r} \hline 68 \\ +10 \\ \hline \end{array}$$

$$\begin{array}{r} \hline 32 \\ +47 \\ \hline \end{array}$$

$$\begin{array}{r} \hline 89 \\ +0 \\ \hline \end{array}$$

$$\begin{array}{r} \hline 94 \\ +3 \\ \hline \end{array}$$

$$\begin{array}{r} \hline 53 \\ +44 \\ \hline \end{array}$$

$$\hline$$

$$\begin{array}{r} \text{TO} \\ 64 \\ +14 \\ \hline \end{array}$$

$$\begin{array}{r} \hline 73 \\ +22 \\ \hline \end{array}$$

$$\begin{array}{r} \hline 84 \\ +14 \\ \hline \end{array}$$

$$\begin{array}{r} \hline 56 \\ +23 \\ \hline \end{array}$$

$$\begin{array}{r} \hline 14 \\ +5.3 \\ \hline \end{array}$$

$$\begin{array}{r} \hline 41 \\ +58 \\ \hline \end{array}$$

$$\hline$$

Exercise 8.4

1. There are 22 boys and 17 girls in a class. How many children are there in the class?
2. Anuj had 25 rupees his mother gave him 20 rupees. How much money does he have now?
3. Bakul bought a notebook costing 7 rupees and a book costing 22 rupees. How much money did he spend in all?
4. Avani had 11 bangles she bought 12 more bangles. How many bangles does she have now?

5. There were 34 children in a class. Three more children were admitted in the new session. How many children are there in the class now?

6. John lives in a flat on the second floor. If there are 15 stairs from ground to the first floor and 14 from first to second floor. How many stairs John has to climb to go to his flat?

7. Mary's mother bought 10 apples and 12 bananas. How many fruits did she buy?

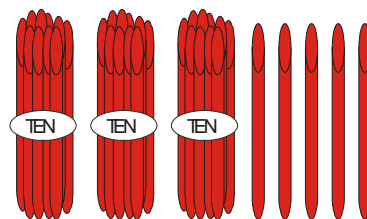
8. Kamla weighs 5 kg more than her younger brother. If her brother weighs 12 kg how much does she weigh?

UNIT 8

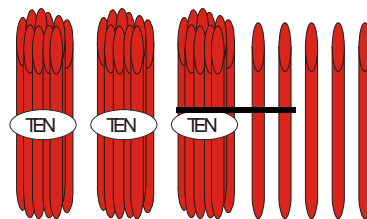
Subtraction of two digit numbers

1. Using sticks-For example to subtract 12 from 35, we set aside 3 bundles of ten sticks and 5 single sticks for 35 and remove 1 bundle of ten sticks and 2 single sticks for 12 from these and count the remaining ones.

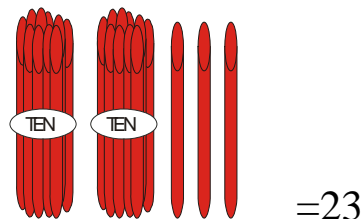
Set aside



Remove



Count the left over sticks



=23

Therefore $35 - 12 = 23$

2. By expressing the numbers in tens and ones and subtracting the ones from ones and tens from tens.

$$35 = 3 \text{ tens} + 5 \text{ ones}$$

$$-12 = 1 \text{ ten} + 2 \text{ ones}$$

$$= 2 \text{ ten} + 3 \text{ ones} = 23$$

3. By writing in short form and remembering that the left digit denotes the tens and the right digit ones. You may write T for tens and O for ones above the numbers.

$$\begin{array}{r} \text{T O} \\ 35 \\ -12 \\ \hline 23 \\ \hline \end{array}$$

Exercise 8.1

Subtract the following by using bundles of ten sticks and single sticks:

$$\begin{array}{r} \text{T O} \\ 24 \\ -13 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T.O} \\ 68 \\ -25 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T.O} \\ 84 \\ -12 \\ \hline \end{array}$$

$$\begin{array}{r} 35 \\ -23 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \\ -3 \\ \hline \end{array}$$

$$\begin{array}{r} 38 \\ -26 \\ \hline \end{array}$$

$$\begin{array}{r} 49 \\ -24 \\ \hline \end{array}$$

$$\begin{array}{r} 95 \\ -32 \\ \hline \end{array}$$

$$\begin{array}{r} 29 \\ -18 \\ \hline \end{array}$$

$$\begin{array}{r} 67 \\ -40 \\ \hline \end{array}$$

$$\begin{array}{r} 88 \\ -45 \\ \hline \end{array}$$

$$\begin{array}{r} 67 \\ -27 \\ \hline \end{array}$$

$$\begin{array}{r} 75 \\ -35 \\ \hline \end{array}$$

$$\begin{array}{r} 72 \\ -21 \\ \hline \end{array}$$

$$\begin{array}{r} 28 \\ -17 \\ \hline \end{array}$$

$$\hline$$

$$\hline$$

$$\hline$$

Exercise 8.2

Subtract the following by first expressing the numbers as tens and ones and subtracting the ones from ones and tens from tens:

1. $47 = \underline{\quad} \text{ tens} + \underline{\quad} \text{ ones}$

$-32 = \underline{\quad} \text{ tens} + \underline{\quad} \text{ ones}$

$$\underline{\quad} \text{ tens} + \underline{\quad} \text{ ones} = \underline{\quad}$$

2. $26 = \underline{\quad} \text{ tens} + \underline{\quad} \text{ ones}$

$-14 = \underline{\quad} \text{ tens} + \underline{\quad} \text{ ones}$

$$\underline{\quad} \text{ tens} + \underline{\quad} \text{ ones} = \underline{\quad}$$

3. $83 = \underline{\quad} \text{ tens} + \underline{\quad} \text{ ones}$

$-63 = \underline{\quad} \text{ tens} + \underline{\quad} \text{ ones}$

$$\underline{\quad} \text{ tens} + \underline{\quad} \text{ ones} = \underline{\quad}$$

4. $54 = \underline{\quad} \text{ tens} + \underline{\quad} \text{ ones}$

$-22 = \underline{\quad} \text{ tens} + \underline{\quad} \text{ ones}$

$$\underline{\quad} \text{ tens} + \underline{\quad} \text{ ones} = \underline{\quad}$$

5. $94 = \underline{\hspace{1cm}} \text{ tens} + \underline{\hspace{1cm}} \text{ ones}$

$-24 = \underline{\hspace{1cm}} \text{ tens} + \underline{\hspace{1cm}} \text{ ones}$

$\underline{\hspace{1cm}} \text{ tens} + \underline{\hspace{1cm}} \text{ ones} = \underline{\hspace{2cm}}$

6. $76 = \underline{\hspace{1cm}} \text{ tens} + \underline{\hspace{1cm}} \text{ ones}$

$-23 = \underline{\hspace{1cm}} \text{ tens} + \underline{\hspace{1cm}} \text{ ones}$

$\underline{\hspace{1cm}} \text{ tens} + \underline{\hspace{1cm}} \text{ ones} = \underline{\hspace{2cm}}$

7. $49 = \underline{\hspace{1cm}} \text{ tens} + \underline{\hspace{1cm}} \text{ ones}$

$-36 = \underline{\hspace{1cm}} \text{ tens} + \underline{\hspace{1cm}} \text{ ones}$

$\underline{\hspace{1cm}} \text{ tens} + \underline{\hspace{1cm}} \text{ ones} = \underline{\hspace{2cm}}$

8. $55 = \underline{\hspace{1cm}} \text{ tens} + \underline{\hspace{1cm}} \text{ ones}$

$-55 = \underline{\hspace{1cm}} \text{ tens} + \underline{\hspace{1cm}} \text{ ones}$

$\underline{\hspace{1cm}} \text{ tens} + \underline{\hspace{1cm}} \text{ ones} = \underline{\hspace{2cm}}$

9. $16 = \underline{\hspace{1cm}} \text{ tens} + \underline{\hspace{1cm}} \text{ ones}$

$-5 = \underline{\hspace{1cm}} \text{ tens} + \underline{\hspace{1cm}} \text{ ones}$

$\underline{\hspace{1cm}} \text{ tens} + \underline{\hspace{1cm}} \text{ ones} = \underline{\hspace{2cm}}$

Exercise 8.3

Subtract the following remembering that the right digit above which O is written represents the ones in the number and the left digit above which T is written represents the tens in the number and subtracting the ones from ones and tens from tens

$$\begin{array}{r} \text{T O} \\ 39 \\ -24 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T O} \\ 55 \\ -13 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T O} \\ 38 \\ -16 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T O} \\ 28 \\ -14 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T O} \\ 38 \\ -23 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T O} \\ 55 \\ -13 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T O} \\ 46 \\ -22 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T O} \\ 57 \\ -25 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T O} \\ 99 \\ -6 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T O} \\ 27 \\ -20 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T O} \\ 37 \\ -21 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T O} \\ 27 \\ -17 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T O} \\ 48 \\ -23 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T O} \\ 46 \\ -13 \\ \hline \end{array}$$

$$\begin{array}{r} \text{T O} \\ 89 \\ -28 \\ \hline \end{array}$$

TO
4 8
-2 6

6 8
-3 7

5 7
-2 5

3 9
-2 4

9 4
-6 3

7 4
-4 3

TO
6 3
-3 1

4 9
-3 5

8 5
-3 2

2 5
-1 2

9 8
-5 0

8 8
-6 4

TO
8 8
-3 4

7 3
-4 0

9 9
- 6

6 3
-6 3

5 0
-3 0

9 7
-2 4

Exercise 8.4

Express the following word problems as mathematical sentences and solve them:

1. There are 45 children in a class. If there are 22 girls how many boys are there?
 $45 - 22 = 23$
2. Aman had 35 rupees. He bought a book for rupees 21, how much money does he have now?
3. Raman has 47 rupees and Suman has 23 rupees. Who has more money and how much more?
4. Joyce had 12 rupees and after her mother gave her some more money she had 35 rupees. How much money did Joyce's mother give her?
5. There were 25 girls and 30 boys playing in the playground. How many children are in there in the playground?
6. Shamim had 45 rupees her mother gave her 20 rupees. How much money does she have now?

7. Fifteen girls and 27 boys went for a picnic. Were there more girls or boys and how many more?
8. A fruit seller had 48 bananas. He sold 24 of those. How many bananas are left with him?
9. Sarah bought a packet containing 76 toffees to give to her classmates on her birthday. She distributed 64 of those. How many toffees does she have now?
10. In a cricket match Sachin made 67 runs and Ganguli made 43 runs. How many more runs did Sachin make?

UNIT 9

Money

We need money to buy things. Different countries have different names for money. In India we use **rupees**. The worth of a note or coin is called its **denomination**. Notes of denomination of rupees 1, 2 and 5 are available in notes as well as coins. The coins and notes of various denominations up to 100 are given below:

Notes and coins of different denominations







Finding the amount of money for many notes of different denominations

If we have several ten-rupee notes we can find the amount of money we have by counting by ten. For example, if we have 7 ten-rupee notes, we count them by ten 10, 20, 30, 40, 50, 60 and 70, saying each number as we set aside each note. The last number that we say that is 70 in this case gives us the amount of money.

If we have several five-rupee notes we can find the amount of money we have by counting by five. For example, if we have 5 five-rupee notes, we count by five-5, 10, 15, 20 and 25 as we set aside each note till no notes are left. The last number that we say 25 in this case gives us the amount of money.

If we have several two-rupee notes we can similarly find the amount of money we have by counting by two. For example, if we have 6 two-rupee notes, we count by two-2, 4, 6, 8, 10 and 12. The last number that is 12 gives us the amount of money.

If there are several notes of different denominations we can find amount of money by first counting notes of the same denomination separately and then adding them. We can also first count the higher denomination and then count by a number equal to the value of lower denomination notes. The last number would give the amount of money. For example, if we have 4 ten-rupee notes and 3 five 5-rupee

notes, we first find the worth of 4 ten- rupee notes 10, 20, 30 and 40 which is equal to 40 and then the worth of 3 five- rupee notes by counting by 5-3 numbers 5, 10 and 15 and then add 40 and 15 to find the total amount of money. As $40 + 15 = 55$, the total amount of money is 55 rupees. We can also count by 5 three numbers beginning with 40 e.g. 45, 50 and 55. As the last number is 55, the total amount of money is 55.

Exercise 10.1

Write the amount of money against the given notes









Exercise 10.2

Set aside the following notes using paper money and find the total worth of these (or if paper money is not available, find the amount of money the person would have who has the following notes) and write it in the box given against them:

- | | |
|--|----------------------|
| 1. 4 one-rupees notes | <input type="text"/> |
| 2. 6 one-rupees notes | <input type="text"/> |
| 3. 2 ten-rupees notes | <input type="text"/> |
| 4. 5 ten-rupees notes | <input type="text"/> |
| 5. 3 five-rupees notes | <input type="text"/> |
| 6. 2 two-rupees notes | <input type="text"/> |
| 7. 1 two-rupees notes and 3 one-rupees notes | <input type="text"/> |
| 8. 1 ten-rupees note and 3 one-rupees notes | <input type="text"/> |
| 9. 4 ten-rupees note and 3 one-rupees notes | <input type="text"/> |
| 10. 2 five-rupees notes and 2 one-rupees notes | <input type="text"/> |
| 11. 6 ten-rupees note and 2 two-rupees notes | <input type="text"/> |
| 12. 2 ten-rupees note and 4 five-rupees notes | <input type="text"/> |
| 13. 3 five- rupees note and 4 one-rupees notes | <input type="text"/> |

UNIT 9

Measurement

Comparison of attributes of height, length, thickness, capacity, weight and time

Height

Ask children to compare height of readily available objects in the environment such as children, plants, children's desk and teacher's table by asking questions such as:

Tell which of the two specific objects is taller?

Tell which of the two specific objects is shorter?

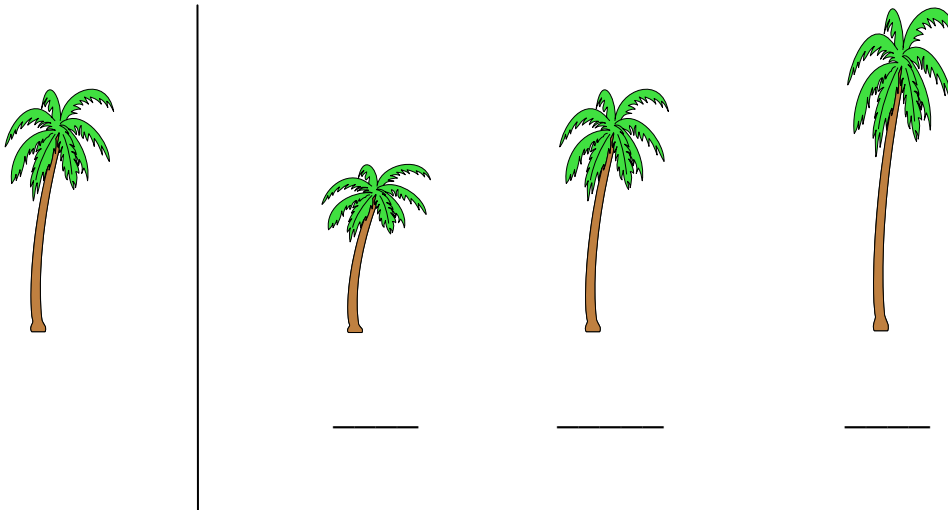
Point to two objects that are about the same height?

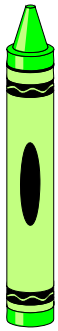
Arrange objects from smallest to tallest.

Arrange objects from tallest to smallest.

Compare the objects on the right of the line with that on the left.

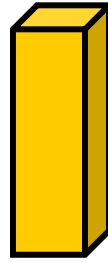
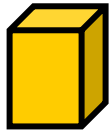
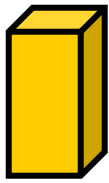
Write under the object T if it is taller S if it is shorter and E if it is of the same height as the one on the left.











Length

Ask children to compare length of readily available objects in the environment such as pencil, pen, sticks, lines and arrows drawn on the black board by asking questions such as:

Tell which of the two specific objects is longer?

Tell which of the two specific objects is shorter?

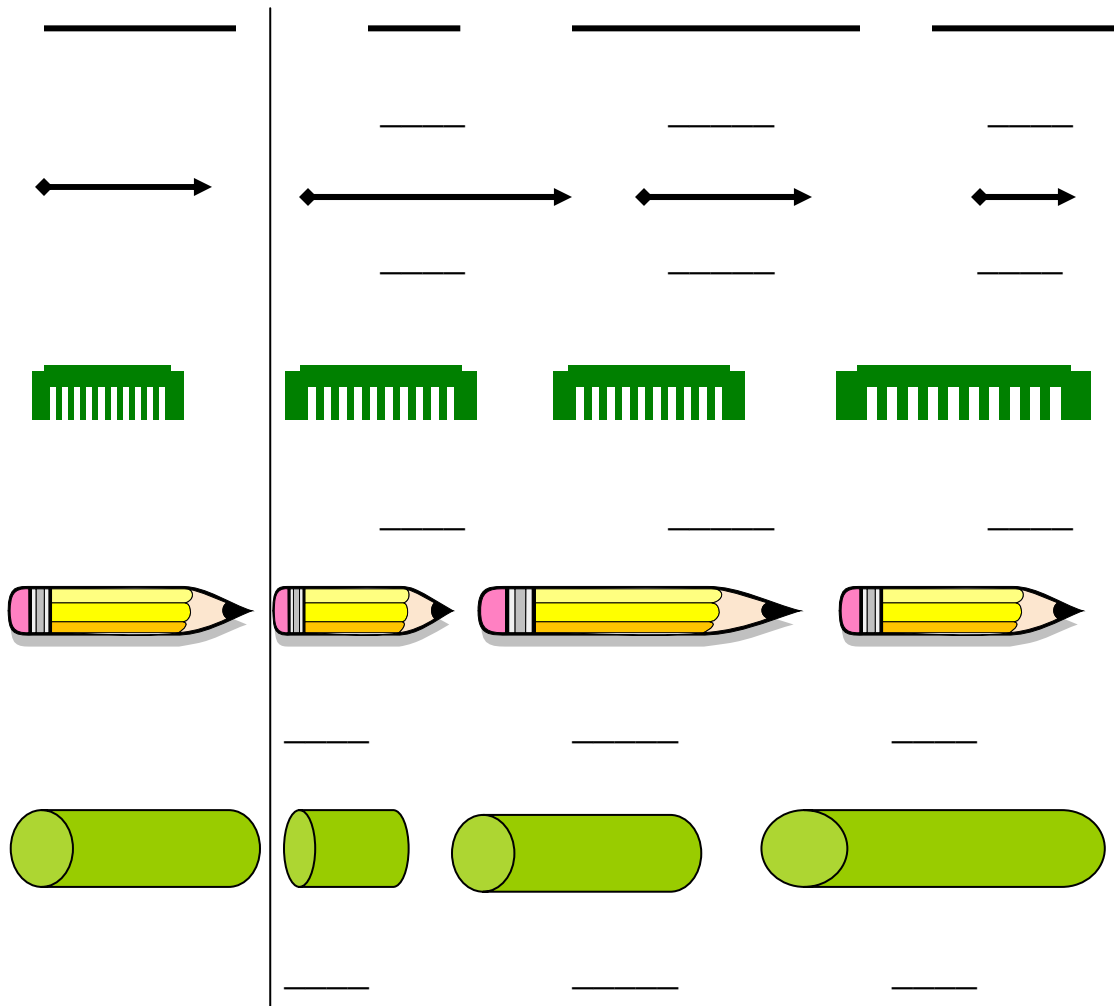
Point to two objects that are about the same length?

Arrange three objects from largest to smallest length.

Arrange three objects from smallest to largest length.

Compare the objects on the right of the line with that on the left.

Write under the object L if it is longer S if it is shorter and E if it is of the same length as the one on the left.



Estimate and measure length in terms of non-standard units

Cut a strip of paper or cardboard that is as long as your little finger, call this “chichi”.

How many chichis long is your mathematics book?

How many chichis long is your pen?

How many chichis long is your nose?

Without measuring tell about how many chichis long is your pencil?

Measure and check.

Then ask them first to measure different things using other non-uniform units such as hand span, foot so that they can have a mental image of the unit. Then ask them to tell without measuring the length of other objects e.g. how many hand spans is the length of your desk? Then ask them to measure and check.

Thickness

Ask children to compare thickness of readily available objects in the environment such as pens, pencils, crayons, chalk by asking questions such as:

Tell which of the two specific objects is thicker?

Tell which of the two specific objects is thinner?

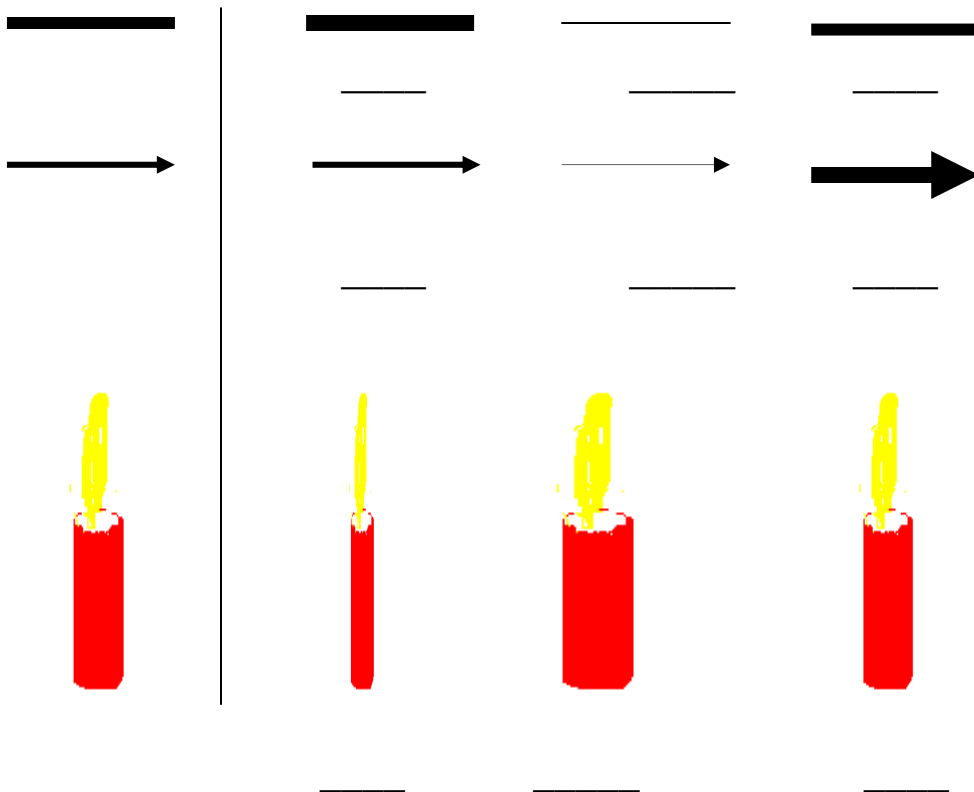
Are there any objects that are about the same thickness?

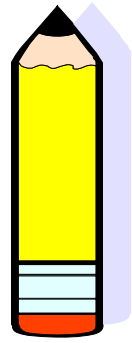
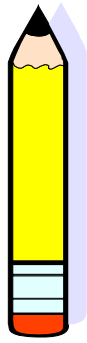
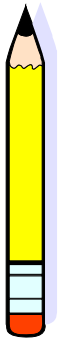
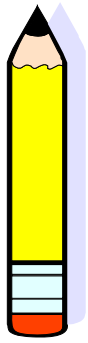
Arrange objects from thinnest to thickest.

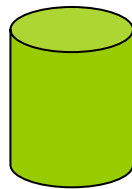
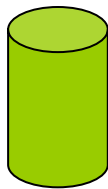
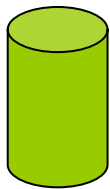
Arrange objects from thickest to thinnest.

Compare the objects on the right of the line with that on the left.

Write under the object TK if it is thicker TN if it is thinner and E if it is of the same thickness as the one on the left.

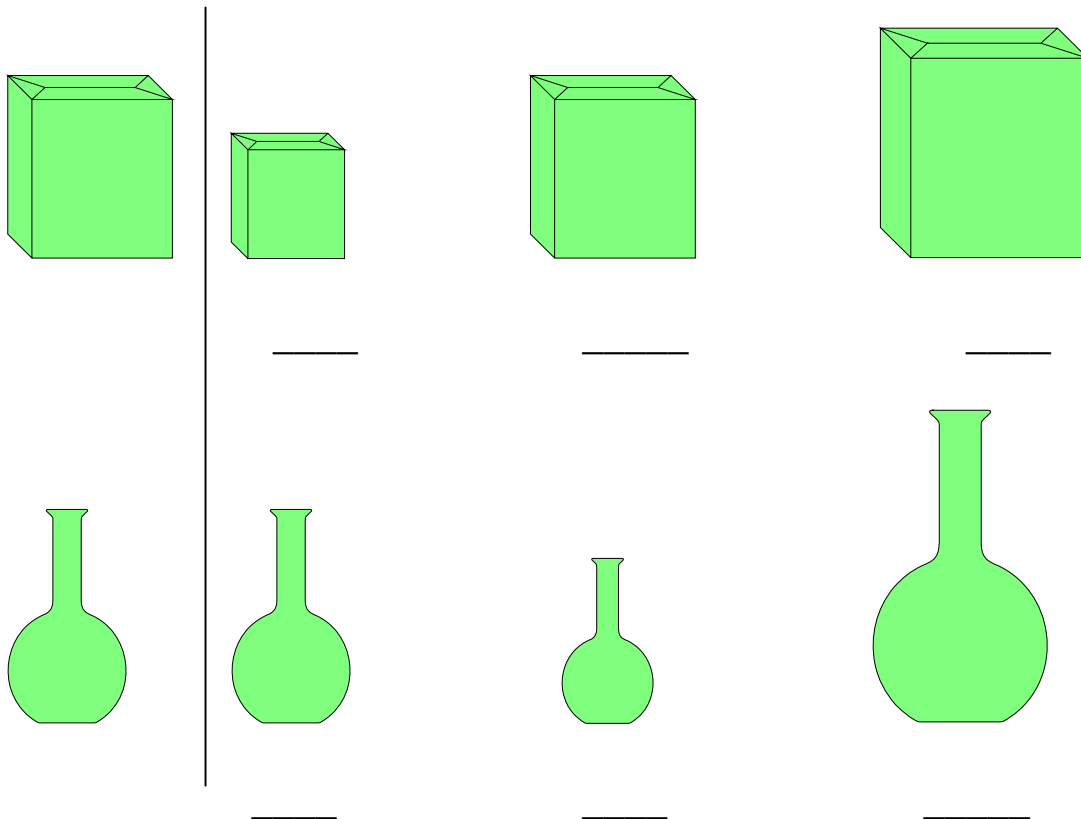


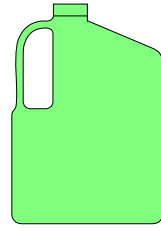
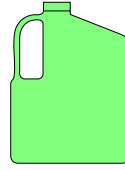
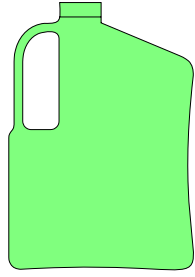
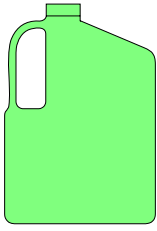


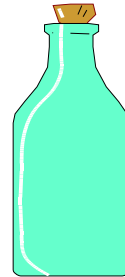
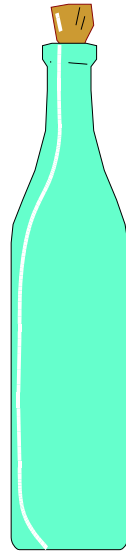
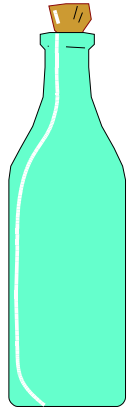
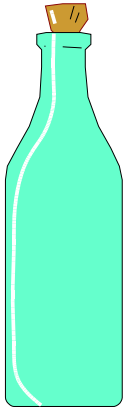


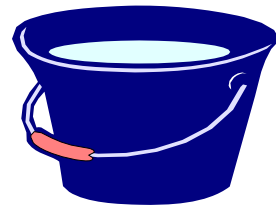
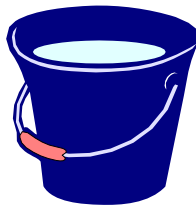
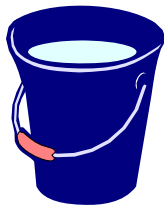
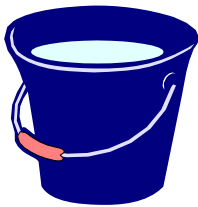
Capacity

1. Ask children to bring plastic bottles, jars, and cardboard boxes and ask questions such as:
Tell which of the two specific containers can hold more water or sand?
Tell which of the two specific containers will hold less water or sand?
Point to two containers that will hold about the same amount of water or sand?
2. Compare the containers on the right of the line with that on the left. Write under the containers M if it can contain more, L if it will hold less, and E if it can hold the same amount as the one on the left.









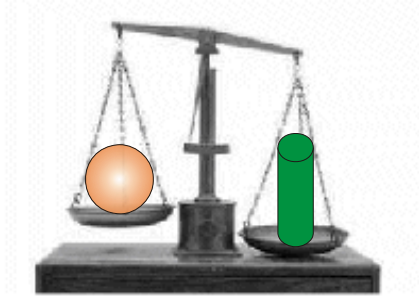
3. Arrange three containers or boxes of the same shape and different sizes from smallest to largest.
Verify the arrangement by pouring sand or water from one to the other.
4. Arrange three containers or boxes of the different shapes and sizes from largest to smallest.
Verify these by pouring sand or water from one to the other.
5. Cut the shapes given in Activity Sheet 9.1 and paste similar shapes from smallest to largest in a row in the table given below

5. Cut the shapes given in Activity Sheet 9.2 and paste similar shapes from largest to smallest in a row in the table given below

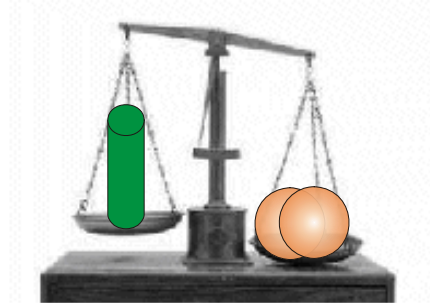
Weight

Ask students to take out two objects of different weight from their school bag, one in each hand and ask the student to tell which one weighs more and which one weighs less. How did they determine which weighed more and which weighed less. The one that weighs more is called **heavier** and the one that weighs less is called **lighter**.

You can also tell what weighs more by using a balance. The side of the balance with heavier objects goes down.



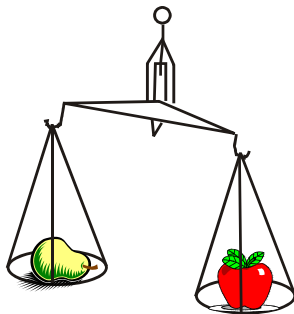
Cylinder is heavier than the sphere



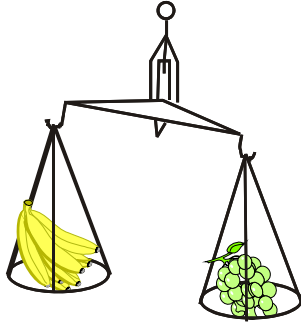
One cylinder is lighter than two spheres

Ask questions given below:

1. Give examples of situations that require measurement of weight.
2. Tell which of the two objects is heavier? How did you find out?



3. Tell which of the two objects is lighter? How did you find out?



4. Does the size of an object always determine how much it weighs?
5. Give examples of small objects that weigh a lot.
6. Give examples of large objects that do not weigh a lot.
7. How can we determine how much an object weighs?
8. Have you seen other types of balances? If yes where? How can you compare weights using them?

Time

Ask students to describe event like the following in correct order:

What you do after you get up and before you come to school.

Teacher writes on the black board in order and reads it.

The events that occur before an event are also said to be occurring **earlier**.

Give examples using the events on the black board and ask questions on which events occurred earlier.

What you do after you go back from school.

The events that occur after an event are also said to be occurring **later**.

Teacher writes on the black board in order and reads it.

Give examples using the events on the black board and ask questions on which events occurred later.

Some events take a longer time than others. They are said to have **longer duration**.

Other events take a shorter time than others. They are said to have **shorter duration**.

Teacher gives examples and asks questions on which events have shorter or longer duration.

Ask questions

1. Relating to events that occurred earlier and later in the class timetable on a particular day (e.g. Study of Hindi or games, lunch break or games, study of Hindi or mathematics)?
2. Relating to before or after in a sequence of events in doing something as told by students e.g. brushing your teeth or taking a bath.
3. Relating to events that have shorter or longer durations e.g. a serial or a picture on TV, a picture on TV or a one day cricket match.

UNIT 10

Handling and Display of Data

Activity 10.1

Teacher takes any collection of objects such as blocks, chips, buttons, keys and passes one of these around and asks a student to describe one property of the object; another student describes some other property of the object that has not been described before.

Teacher writes these properties on the blackboard.

Then pass another object from the same collection around and ask them to describe its properties.

Teacher asks a volunteer to sort a group of objects into groups that are similar in some way. Teacher demonstrates how to organise each group into columns on a paper with squares (large enough to fit the objects) so that items similar in regard to a property are in different columns. Make sure that there is only one object in each square.

Display the data of a sorting of a group of objects on an overhead projector otherwise on your table and call students in groups to show them and ask them questions such as the following:

What property was used to sort the objects?

What name would be appropriate for each column?

How many objects are there in columns with different names?

Which column has the most objects?

Which column has the least objects?

Are there any columns with the same number of objects?

What is the total number of objects?

Can we sort these objects in a different way? If yes, how?

Divide the class into groups and give them an assortment of objects and ask them to sort them.

Ask them what property they used to sort the objects.

Organise objects into columns on a square paper so that items in each column are similar in regard to a property. Make sure that there is only one object in each square.

Discuss the name that is appropriate for each column.

Ask questions such as the following:

How many objects are there in different columns?

Which column has the most objects?

Which column has the least objects?

Are there any columns with the same number of objects?

What is the total number of objects?

Activity 10.2

Divide the class into groups and assign students to cut paper strips equal to the length of their hand span in group 1, little finger in group 2, arm length in group 3, circumference of the head in group 4 and so on arrange these in order of length and ask questions such as

Who has the longest hand span or little finger or arm length or circumference of the head?

Who has the shortest hand span or little finger or arm length or circumference of the head?

Name a pair of students who have the same length of hand span or little finger or arm length or circumference of the head?

Arrange the paper strips in order from smallest to largest.

UNIT 11

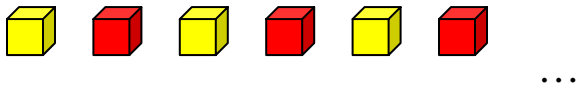
Patterns

Copying, Identifying and Extending Patterns

A pattern is a repetition of form, order or arrangement in predictable ways.

Teacher shows an ABABAB... pattern by clapping or stamping her foot and asks students to copy it.

We can make this pattern with blocks as follows:



Ask students to read it.

Divide the students into groups and provide students with blocks of different colours, shapes and sizes or ask them to bring unused keys or buttons from home or provide cut outs from Activity Sheet 11.1 and ask them to make a similar pattern with those.

Add more blocks to a pattern made with blocks.

Ask them to close their eyes and remove an object from a pattern of objects and ask them what was removed.

Repeat the above activity with patterns AABAABAAB...

ABCABCABC... by varying an attribute such as colour, shape or size

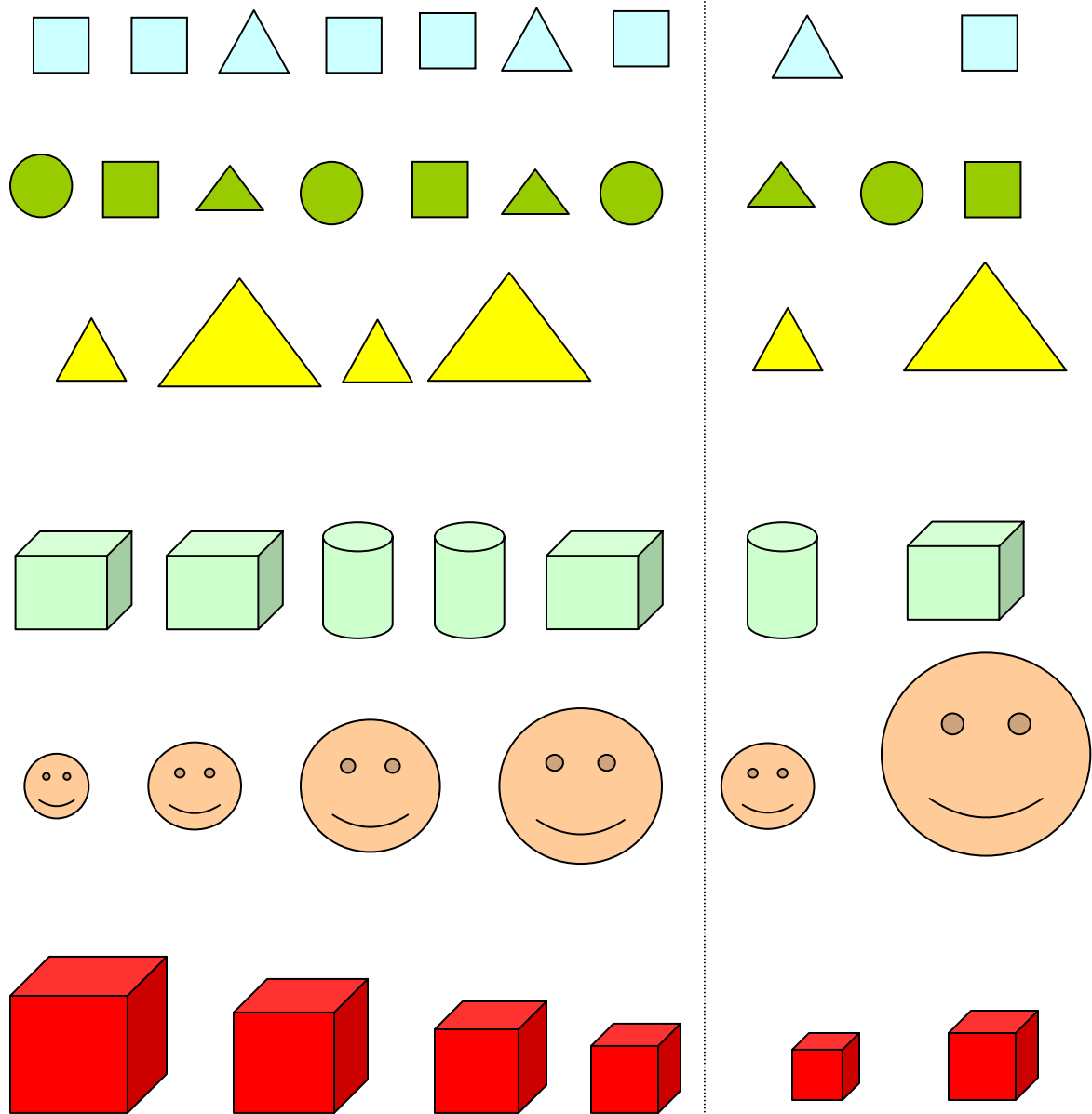
Make new patterns.

Describe the patterns made.

Copy patterns made by others.

Extend patterns made by others.

Look at the pattern of pictures on the left of the line and mark a \checkmark under one of the pictures on the right that will come next:



Pattern in alphabets

The letters given below are arranged in a pattern figure out the next letter:

ABCD__

MNOP__

ACEG__

AZBY__

Pattern in numbers

Look at the patterns in numbers given below and write the next two numbers:

7, 8, 9, 10, _____, _____

56, 55, 54, 53, _____, _____

1, 3, 5, 7, _____, _____

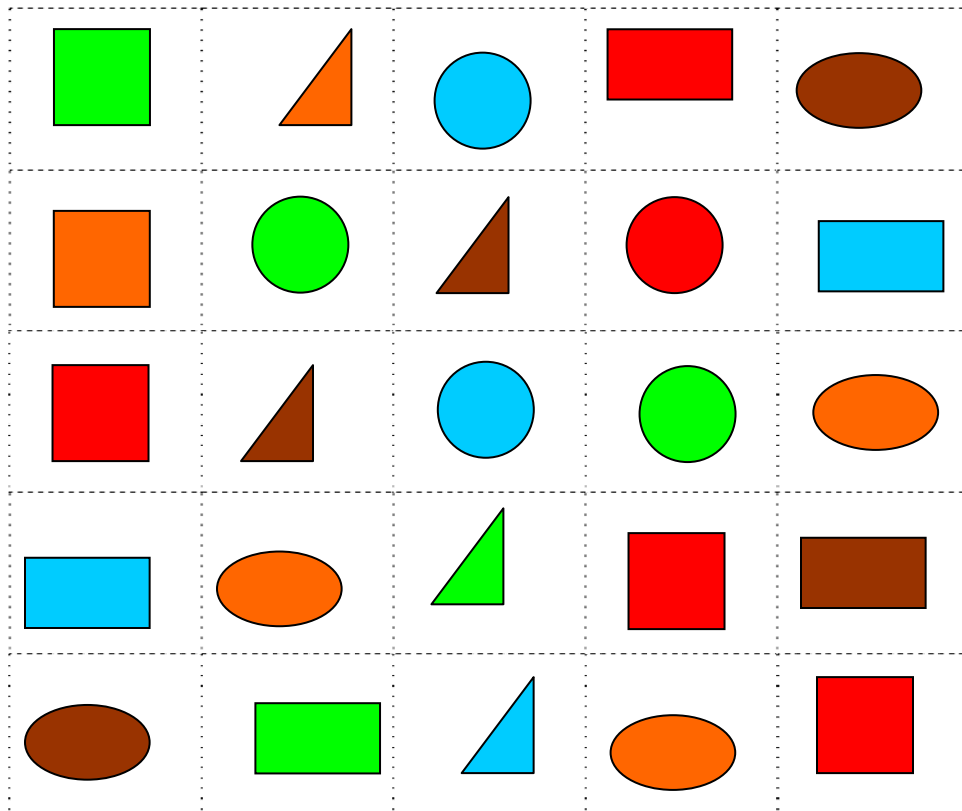
2, 4, 6, 8, _____, _____

10, 20, 30, 40, _____, _____

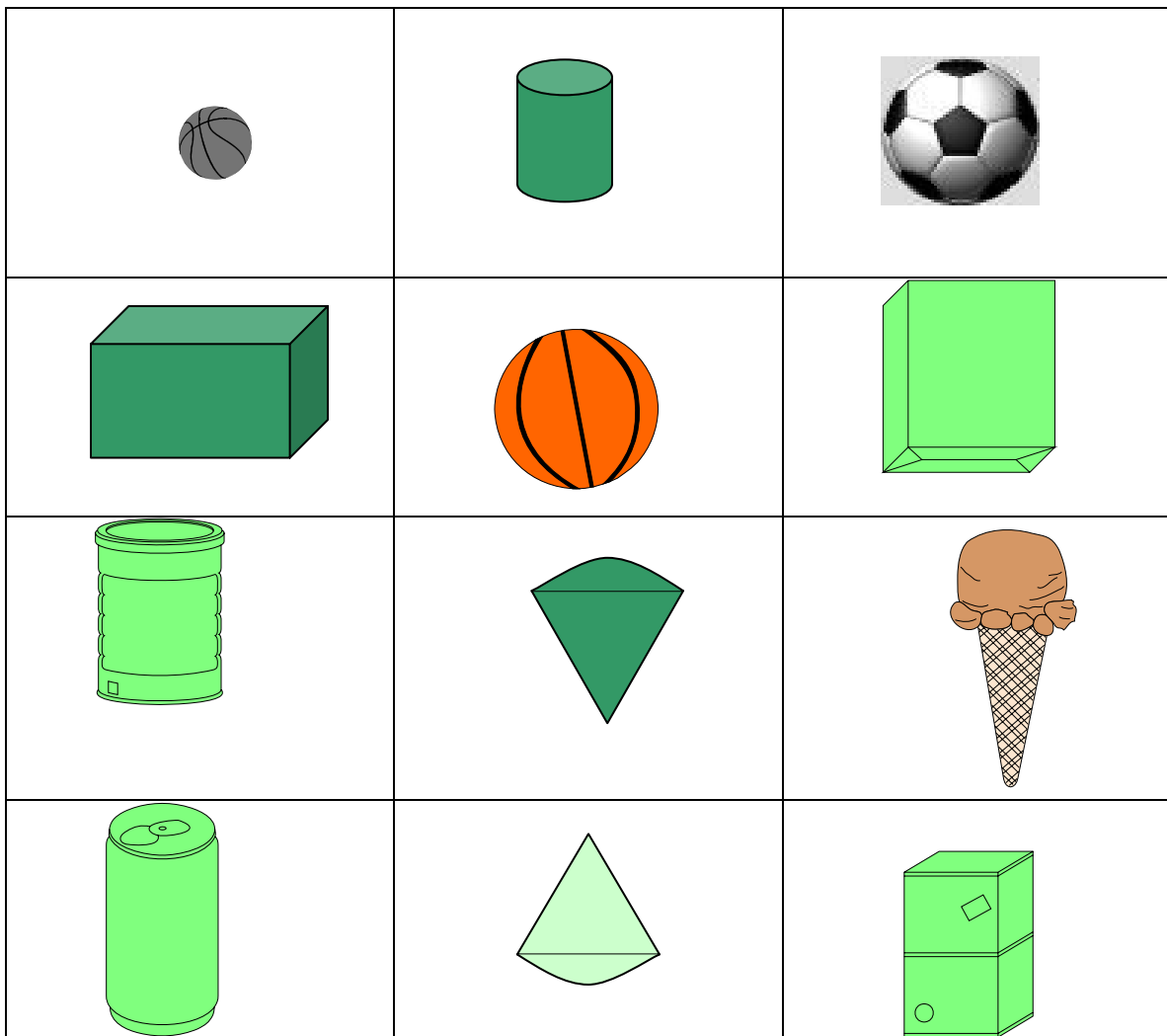
5, 10, 15, 20, _____, _____

ACTIVITY SHEETS

Activity Sheet 1.1

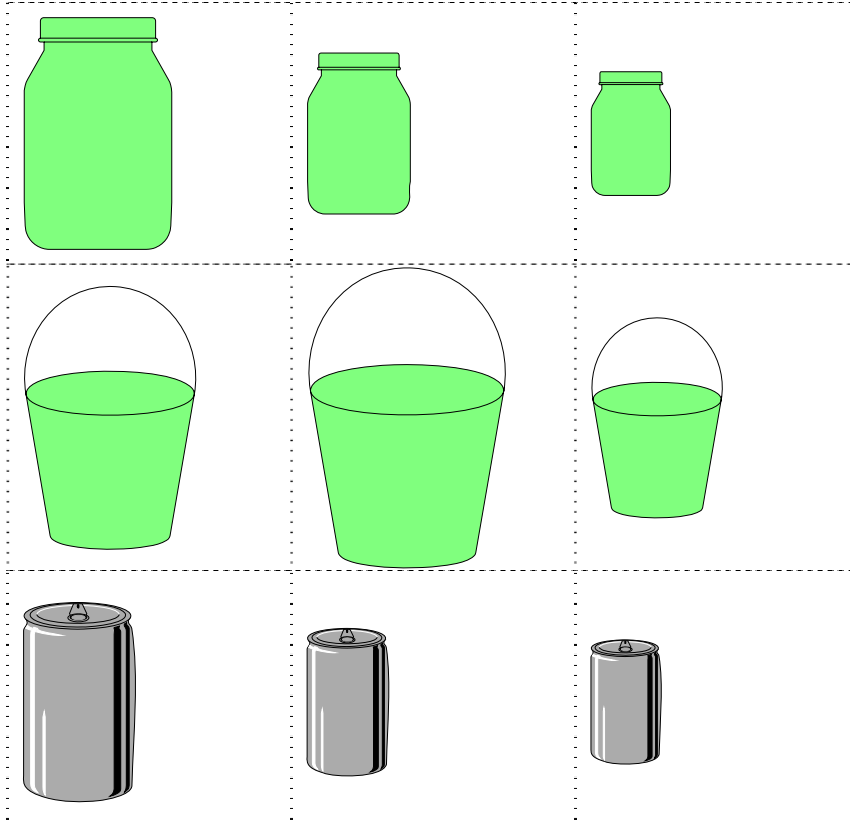


Activity Sheet 1.2

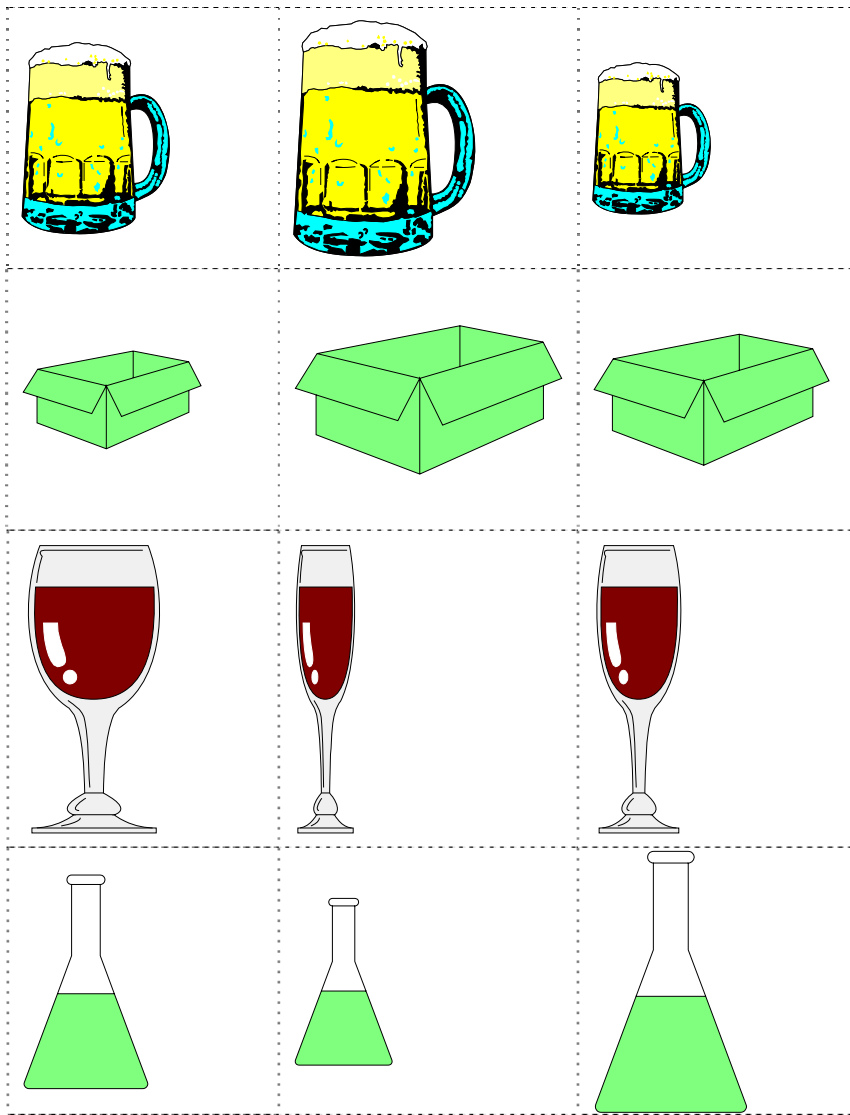


Activity Sheet 6.1

Activity Sheet 9.1



Activity Sheet 9.2



Activity Sheet 11.1

